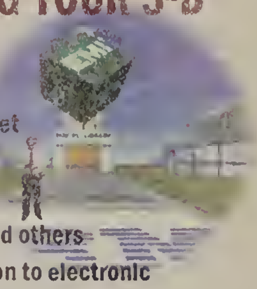
AUGUST 14, 1995 VOLUME 12, NUMBER 33

NetworkWorld

THE NEWSWEEKLY OF ENTERPRISE NETWORK COMPUTING

SETTING YOUR 3-D SITES



A new Internet technology backed by IBM, Visa and others may be a boon to electronic commerce efforts. Page 8.

Survey: Users aren't sold on House telecom reform bill

By Joanie Wexler
Framingham, Mass.

While free-market champions are hailing the U.S. House of Representatives' passage of a radical telecommunications reform bill, network managers fear local telephone service could deteriorate if the legislation is enacted into law.

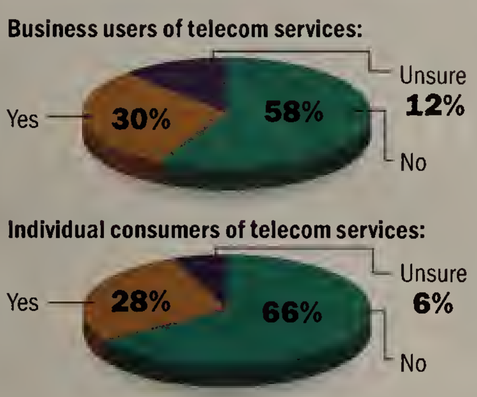
A telephone survey of 151 *Network World* readers, conducted last week by Focus Data, Inc. here, shows clear concern about the impact of the House telecommunications reform effort on the local loop. More than two-thirds of network managers predict the bill would lead to an increase in local service prices, and only about half believe it would bring about effective local-loop competition.

Network managers are divided on the pros and cons of the House approach to reform, which is aimed at smashing down traditional boundaries on local

See **Reform,** *page 53*

BAD MEDICINE FOR BUSINESS AND CONSUMERS

Does the current House bill do enough to protect and promote the interests of...



Business users of telecom services:

Individual consumers of telecom services:

AT&T ties up to the 'Net

Preps grand electronic commerce plan centered on Internet-ready tools and services.

By Joanie Wexler
Basking Ridge, N.J.

AT&T this week will break its near silence on the Internet and lay out a bold scheme to tie its huge network to the equally sprawling 'Net.

The company will blend its existing network infrastructure and services, as well as forthcoming on-line offerings, with the Internet. It will also provide a layer of directory, navigational and transactional tools that spans both networks.

AT&T hopes the plan will offer an enticing way to conduct electronic commerce and will partner with merchants that today sell their wares largely via 800 services, according to internal documents. AT&T intends to help users convert AT&T NetWare Connect Services (ANCS) sites into secure transaction servers accessible from the Internet, in essense creating a "virtual private Internet."

In another approach to privatizing the Internet, customers could tunnel through the 'Net over secure lanes, using AT&T application services such as ANCS or Network Notes, to communicate with Notes or NetWare users on the other end.

These Internet lanes that AT&T plans to carve out are designed for those who want to use standard PC tools to conduct protected transactions with business partners and customers.

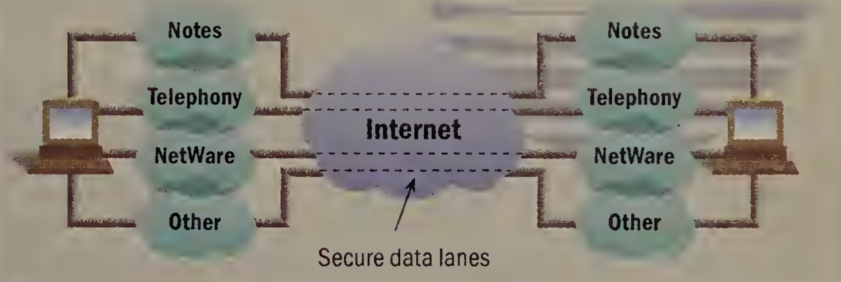
AT&T already has an on-line mall, called PersonaLink, which it also plans to hook into the Internet.

The carrier plans to share in the risk of Internet-based commerce by taking on some liability for credit card

See **AT&T,** *page 54*

INTERNET FOR EVERYONE

AT&T's grand vision is to hook all its services into the Internet with a layer of security, navigational tools, Web hosting, transaction services and firewalls on top.



Sending out Notes
IBM fires up Notes over Its Global Network. Page 6.

AT&T follows suit
Network Notes debuts over the carrier's public net. Page 15.

Novell goes after dynamic new image

By Kevin Fogarty
San Jose, Calif.

Novell, Inc. plans to announce in September a radical image makeover aimed at offsetting Microsoft Corp.'s marketing edge.

At the same time, it will give customers a road map of the technologies it intends to ship in the next three to five years.

The makeover will include a revamping of Novell's product line that involves renaming or repackaging products to clarify how they work together and to make it easier for customers to buy and deploy them.

For example, elements of its Tuxedo transaction processing monitor or the ManageWise net-

See **Novell,** *page 53*

Standards plan or market ploy?

Vendor-driven mgmt. specs play to a skeptical audience.

By Jim Duffy
Boston

While customers yearn for greater interoperability among network management products, they hold out little hope that vendor-driven standards efforts will make tools from different companies work together better.

Cooperative ventures among suppliers, such as the initiative disclosed by IBM last month (*NW,* July 3, page 1), are thinly veiled marketing campaigns delivering more rhetoric than interoperability, said skeptical customers interviewed at last week's Managing Enterprise Networks conference sponsored by *Network World.*

In its effort, IBM is attempting to coalesce industry players around specifications for common management agents, platform interoperability, application portability and modeling of management data.

History is not on the side of the vendors, given the fate of the Open Software Foundation, Inc.'s (OSF) Distributed Management Environment (DME) and the Management Integra-

See **Specs,** *page 54*

Users John Ferreri (l) and George Dobbs *are doubtful that vendor-driven standard initiatives will produce usable products.*

Preparing for Win95

Look before you leap

Four features of Win95 will affect your ability to manage desktops across the enterprise.

By Howard Marks

Microsoft Corp. has teased the imminent arrival of its Windows 95 desktop operating system by asking, "Where do you want to go today?"

One answer might be to get as far away as possible from previous Windows implementations, which have imposed a life of tedium on managers administering desktops across the enterprise.

Win95 promises to change all that, although not without a few gotchas.

Its support for long file names will make server administration easier but could cause migration headaches, especially for companies with a mix of Win95 and Windows 3.X clients. A new user profile feature will relieve some of the past nightmares of tracking users and will give companies the ability to better support roam-

See **Windows 95,** *page 37*

Windows 95

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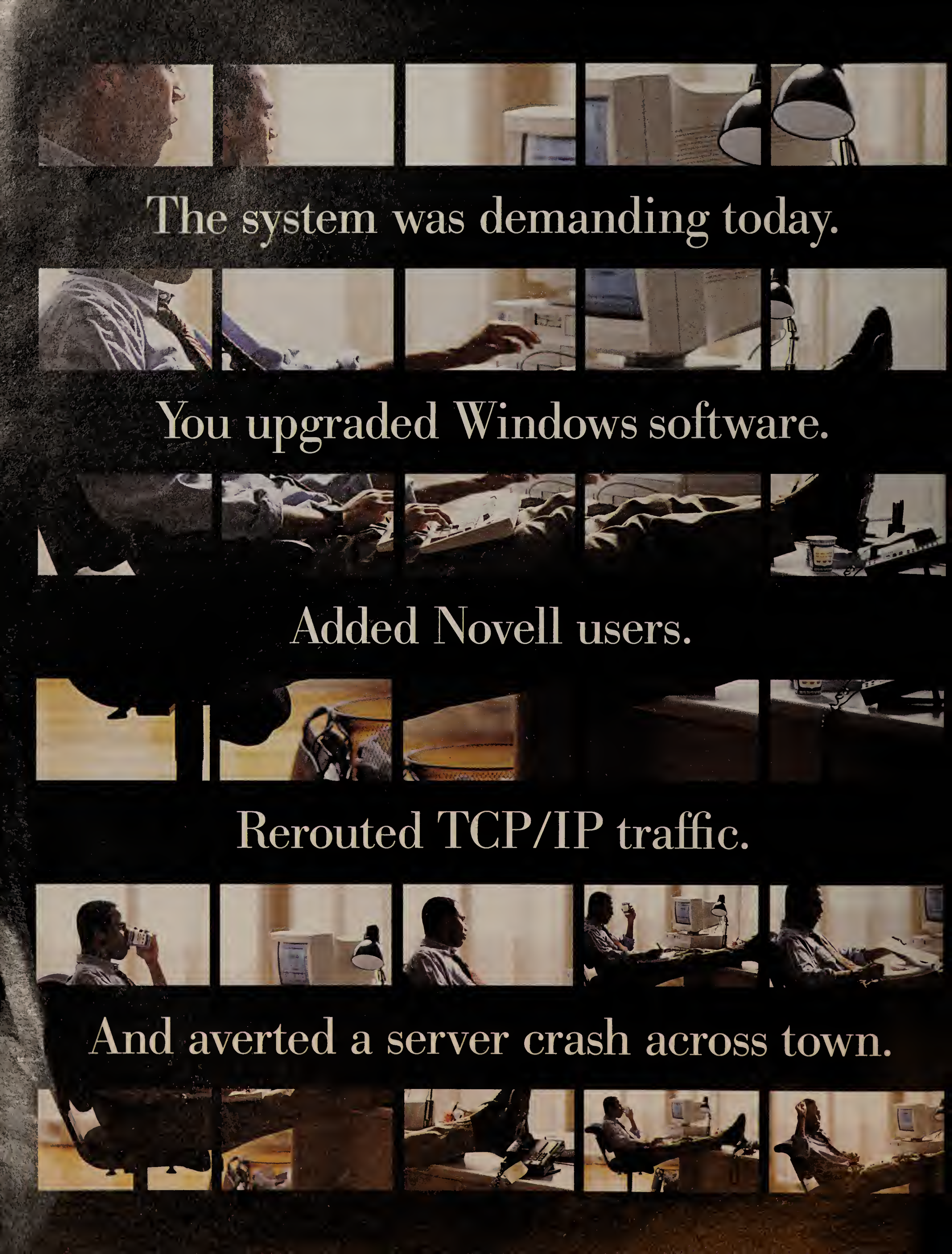
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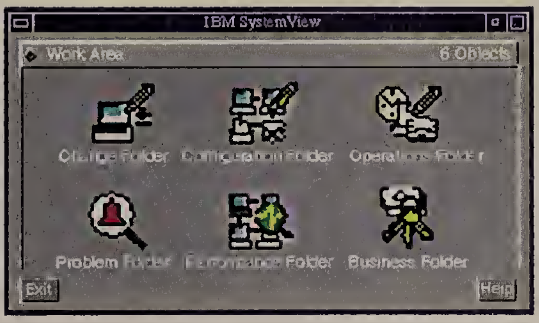

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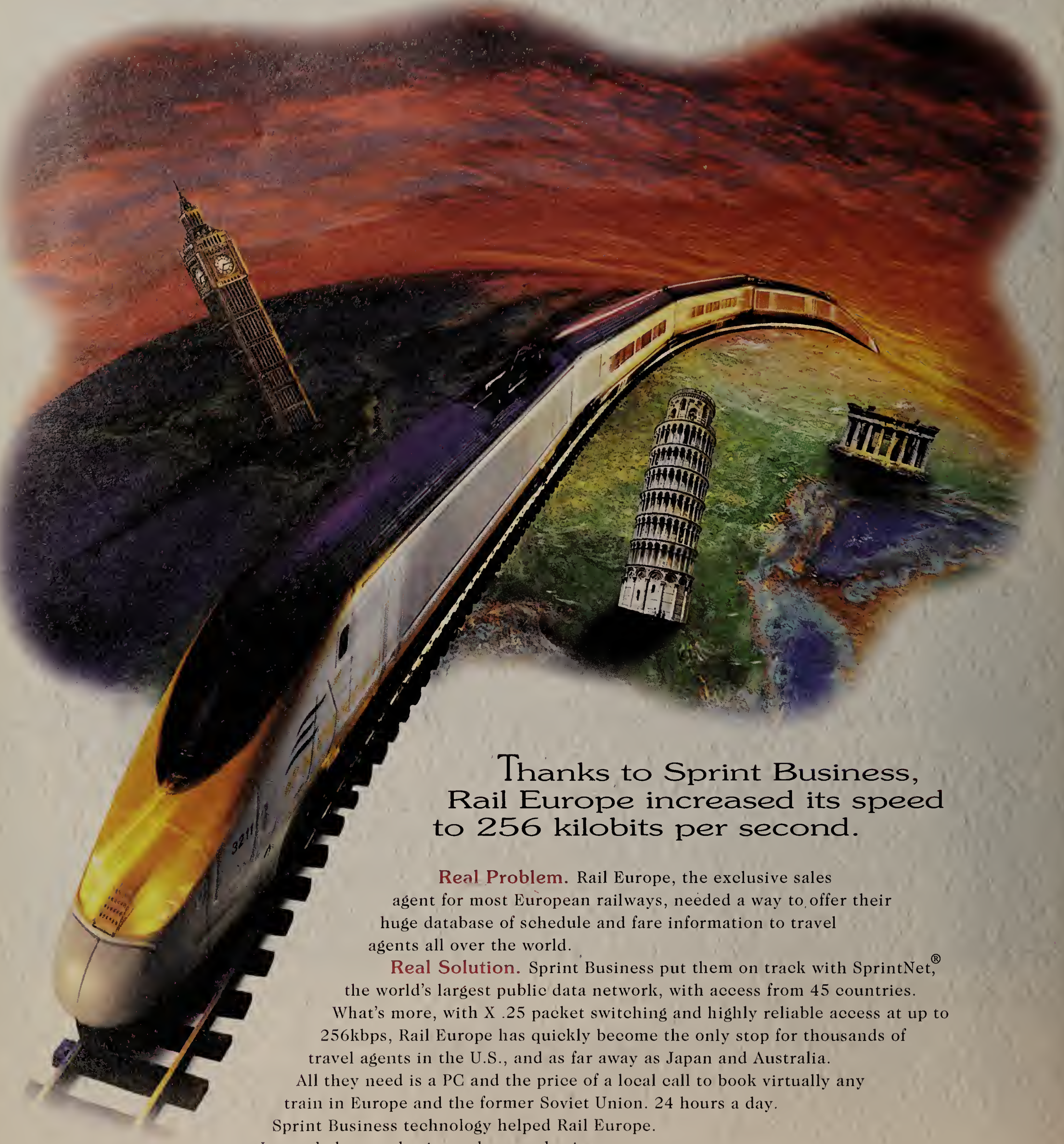

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Briefs, August 14, 1995

ATM Forum shakes down key issues

■ The ATM Forum last week moved to put out for straw votes specifications regarding traffic management, the Private Network-to-Network Interface, the Inter-Carrier Interface and audiovisual Asynchronous Transfer Mode support. These items are likely to be finalized this fall.

The NeXT step

■ At ObjectWorld today, NeXT Computer, Inc. honcho Steve Jobs will unveil a set of tools for building distributed applications that run over the Internet.

AT&T squeezes packets onto ISDN

■ Users of AT&T's ISDN Primary Rate Interface services tomorrow will find themselves with a new option that could allow them to squeeze packet traffic onto their links.

A tariff filed by AT&T will afford PRI users — largely call center operators requiring caller ID capabilities — the ability to add packet data switching capabilities to their ISDN networks.

Cabletron conducts Maestro change

■ Cabletron Systems, Inc. and development partner Calypso Software Systems, Inc. next week will introduce a new version of their MaestroVision application and a name change for the product as part of a Spectrum systems management splash (*NW*, June 26, page 13). Now called Atrium for Spectrum, the software will allow users to monitor and configure Novell, Inc. NetWare and Microsoft Corp. Windows 95 and Windows NT clients and servers, in addition to Unix workstations, a Calypso spokesperson said. Cabletron declined comment.

Built to last

■ At T minus two weeks and counting, Microsoft Corp. got word from the U.S. Department of Justice that it will not try to stop the company from bundling access to The Microsoft Network (MSN) with Windows 95, a move that would have forced Microsoft to recall its already pressed disks.

Separately, Microsoft announced it will limit initial MSN enrollment to 500,000 "charter" members until it beefs up the network capacity. Its rates will be $4.95 monthly for 3 hours of use and $2.50 for each additional hour.

I spy electronic commerce

■ Spyglass, Inc., a provider of World-Wide Web server technology to OEM vendors, including IBM and Microsoft Corp., last week said it is shipping new server and client Web software to support payment systems such as electronic wallets from Cybercash, Inc., the Electronic Business Co-op and First Virtual Corp.

Run for the roses

■ Time is running out on your chance to enter *Network World's* 11th Annual User Excellence Awards competition. Tell us in 250 to 500 words how network technology is helping your organization meet its strategic goals. The most compelling stories will be showcased in a special year-end issue of *NW* and winners will be honored at ComNet '96 in Washington, D.C.

Send your entry via the Internet to excellence@nww.com, via MCI Mail (390-4868) or by fax to (508) 820-1103.

For more information, point your Web browser at http://www.nww.com/userexc.html.

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NetworkWorld's *Mission: To provide news and analysis that help network IS professionals deliver the network computing infrastructure and distributed applications required to meet evolving business needs.*

Lotus comes up short on its product delivery

By Annmarie Timmins
Cambridge, Mass.

When it comes to delivering messaging upgrades, Lotus Development Corp. isn't beating anyone's clock, a state of affairs shared by its major rivals.

In fact, nearly all of Lotus' communications products have hit some kind of delivery snag.

Lotus is still promising two cc:Mail upgrades. One, to eliminate systems downtime — dubbed Eliot or cc:Mail 6.0 — has been expected for years. It was, until recently, scheduled to ship this summer. Several months ago, the date was pushed back until this fall. Now Lotus says the product is due by year-end.

The beta version of Eliot, however, still has not been tested outside Lotus, said Mark Stieglitz, the firm's group manager for communications products. Customers have seen only demos. Stieglitz did not say when Lotus would ship its beta, which users expected last quarter.

A more ambitious upgrade for client/server operation, called cc:Mail 7.0, was set for a year-end release. Lotus now says it will deliver the product early next year.

And the Lotus Communications Server (CommServer), a Notes 4-based offering that will connect cc:Mail and Notes clients, is already about a year behind its original schedule. After missing the first date, the company pushed delivery back to the end of this year. Lotus still plans to ship some pieces — the Notes 4 server and X.400 option — by the fourth quarter, along with Notes 4.

But don't look for the remaining components — the cc:Mail connector and Simple Mail Transfer Protocol option — until early 1996, said a Lotus spokesperson.

But Jeff Held, a consultant with the Vienna, Va.-based consultancy Ernst & Young, warned against being too hard on Lotus. "By comparison to other [vendors'] products of similar complexity, I don't know that they are doing so bad," he said. "What they are doing hasn't been done before, so it's not a surprise to me — considering all the changes in the architecture — that they are behind."

Microsoft Corp.'s Exchange, for instance, has been years in the making and has missed a series of release dates. Exchange is now targeted for release by the end of the year. Novell, Inc., a relative newcomer to the market, has been slow, rather than late, with its groupware offering, GroupWise XTD. Missing an earlier year-end deadline, the firm now plans to join the groupware party with an early 1996 release.

Some think the Lotus delays are due to shifting priorities, especially the mad dash to ship Notes before year-end. "I think [Lotus] siphoned off a lot of the development effort for cc:Mail to make Notes happen," said one user who requested anonymity. He said the same holds true for CommServer. "That's why they are so late."

To many, however, improving cc:Mail is a key priority. Paul Badowski, a senior networ specialist with Belcan Engineering Group, Inc. in Cincinnati and a cc:Mail user, is looking forward to Eliot's administration improvements.

Right now, Badowski works on Sundays to do maintenance because he would have to take users off-line for two hours in order to do it during business hours.

The long-awaited CommServer is a mail gateway that will integrate the addresses of cc:Mail and Notes messages onto a single platform. It will allow cc:Mail messages to be transported by Notes servers, enhancing the integrity of the system.

Mark Petry, a Notes manager for a major microprocessor manufacturer, has seen the CommServer beta but does not know what to expect from Release 1. It is impossible to simulate the heavy use CommServer will see in real life inside a test lab, according to Petry.

Despite missing earlier dates, some trust the new ones. "They have sworn and made a blood oath that they will do whatever it takes to get this stuff out the door around the end of the year," Held said. ■

Mark your calendar

Product	Feature	Availability
cc:Mail 6.0	Eliminates downtime during maintenance	Year-end
cc:Mail 7.0	Includes a client/server version, MAPI support	1Q 1996
Notes 4.0	Enhances replication, new interface, agents	4Q
Lotus Communications Server (CommServer)	Connects cc:Mail, Notes clients and Notes servers	4Q for X.400 and Notes 4.0 server. CC:Mail connector and SMTP option due early 1996.

IBM aims Notes at Global Net

By Michael Cooney
and Annmarie Timmins
New York

Intensifying an already frenzied effort to establish Notes as the world's groupware and application development standard, IBM last week announced it will offer the package on its global communications network.

But IBM may not be the only new Notes player in town. Company executives, pledging that Notes is "open to all comers" also implied that other public Notes services from from competitors could be in the offing. IBM declined to provide further details.

IBM's *Sarrat says the Global Network will simplify interlinking of far-flung enterprise Notes users.*

The new IBM service would let users collaborate on projects across the nation or around the world. It will also let traveling and remote users access electronic mail and other applications from any location served by IBM's Global Network.

Since acquiring Lotus Development Corp. earlier this summer, IBM executives have said IBM would go to great lengths to make Notes ubiquitous. Along those lines, it did not seek to derail AT&T's Notes plans. AT&T also last week announced the availability of its Network Notes ser-

See **Global Net,** ***page 54***

Switching

IBM preps switches, tools for marrying ATM to AIX, AS/400

By Michael Cooney
Raleigh, N.C.

IBM is readying a massive September ATM rollout that will include new high- and low-end switches, as well as tools for tying AIX and AS/400 users into the high-speed switching world.

The company is also expected to reveal its long-awaited Switched Virtual Network strategy for building virtual LANs across the enterprise, according to presentations from company executives at the recent Guide, Inc. user group meeting.

Gary Byrd, program manager for IBM's Asynchronous Transfer Mode market execution team, said the company is looking to focus its ATM strategy and make sure users have a clear path to follow as they migrate existing LAN and Systems Network Architecture applications toward the switched environment.

"IBM is looking to tie things together and give users a big picture view of the ATM world that it really hasn't spelled out before," said Frank Dzubeck, president of Communications Network Architects, Inc., a consulting firm in Washington, D.C.

On the switch front, IBM will roll out its Nways 2220 Model 200, a six-slot box with a switching capacity of 200M bit/sec that is positioned as a feeder node to larger Nways ATM switches. Model 200 will support at least one 155M bit/sec ATM card as well as traditional WAN port speeds, such as T-1, and any combination of LAN links.

The box is likely to create some positioning problems for IBM since it will come with strong SNA and Advanced Peer-to-Peer Networking support, as does IBM's recently announced 3746 Nways Multiprotocol Controller Model 950. Analysts said users planning to move to ATM should look at the Model 200, not the Model 950, because it will have a stronger lineup of LAN, WAN and ATM support.

Model 200 should be available by the end of the year.

At the high end, IBM will announce Nways Model 700, a 40-slot ATM switch with about 25.6G bit/sec of switching capacity. The box can act as an ATM backbone switch in user nets, but IBM said it expects the Model 700 to be deployed in carrier nets, as well. It should be available by mid-1996.

IBM's current Nways switches, Models 300 and 500, are true user premises-based ATM backbone switches, with up to 4.2G bit/sec of capacity in the larger Nways Model 500.

> *"IBM is getting ready to push the ATM stuff hard in 1996, and by midyear, they'll have many of the tools for users to begin building some solid ATM-based infrastructures."*

"IBM is getting ready to push the ATM stuff hard in 1996, and by midyear, they'll have many of the tools for users to begin building some solid ATM-based infrastructures," noted Tom Nolle, president of CIMI Corp., a consultancy in Voorhees, N.J.

Also slated for midyear availability is LAN emulation support for the mid-range AS/400 platform. LAN emulation maps data from existing LANs to ATM flows.

IBM will also announce a 25M bit/sec LAN emulation board for ISA and PCI-based workstations running AIX, as well as the LAN Emulation Server for AIX. In addition, IBM will roll out a 155M bit/sec PCI board capable of supporting LAN emulation.

The new products will fill out IBM's LAN Emulation Server line, which already includes support for OS/2 LAN Server and Novell, Inc. NetWare. By the end of the year, IBM will move the LAN Emulation Server function inside the 8260 hub. This will enable it to function as a concentrator for traffic from existing LANs that could also pass traffic to larger ATM switches.

Finally, IBM plans to unveil its Switched Virtual Network architecture, which will define how users can group small or large numbers of users over the ATM backbone using software on the Nways switches and hubs.

IBM executives are still sketchy with details about the architecture, but the company's thrust will be to distribute routing functions among multiple nodes — whether they are hubs, desktop workstations or routers — rather than having one central server.

"Cisco and others promote the centralized route server approach, which may end up limiting their scalability," Dzubeck said. "IBM's approach is very different and should be highly scalable."

IBM officials said the company will first add routing functions — using the multiprotocol routing software it licensed last year from Proteon, Inc. — to its hubs and most of its communications equipment. ■

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Electronic commerce enters third dimension

By Ellen Messmer

A new technology that makes on-line banking and shopping a virtual-reality experience for customers may become the cornerstone of future electronic commerce efforts, letting users set up three-dimensional Web sites.

VRML+ provides the brush to create an interactive, 3-D landscape where on-line consumers travel around, communicating with other visitors and shopping in virtual stores with credit cards secured through encryption.

Created by software developer Worlds, Inc., VRML+ is an extension to the Internet standard Virtual Reality Modeling Language.

IBM last week announced VRML+ server and browser software, saying that the technology is an advance from the World-Wide Web's HyperText Mark-up Language (HTML) because it is more dynamic visually and makes Internet navigation easier for users. HTML is the underlying technology for Web page development.

Visa International, Inc. is so sold on VRML+ that it has designed its Electronic Courtyard, a Web site where banks and retailers can set up bank branches and stores.

VRML+ is intended as an open specification, and Worlds last week made it available at its Web site at www.worlds.net. By year-end, IBM, Visa and Worlds will offer free VRML+ browsers for OS/2, Macintosh, Windows 95 and Windows NT.

VRML+ allows for the creation of multiple interactive agents, what Worlds Marketing Director Rob Schmults called "real-life avatars," embodied on screen as robot-like virtual tellers or store clerks. And with VRML+, the users — in their embodiments as virtual bank customers and shoppers — can communicate with other visitors.

"This is where the Internet should go," said Willy Chiu, director of multimedia technology at IBM. He added that IBM will design virtual libraries using VRML+.

The original VRML runs only on a powerful Silicon Graphics, Inc. workstation. IBM said it has also developed VRML+ server software for the RISC System/6000 and may port VRML+ to Solaris and Windows NT.

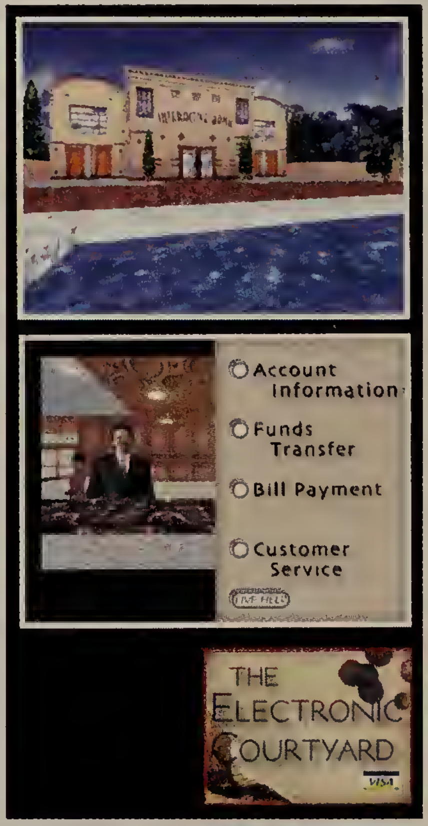
Some still skeptical

While VRML+ could potentially turn the Internet into a 3-D universe, some voiced skepticism about its potential to displace current Web sites in the near future.

"There's some interest in using VRML to create virtual trade shows with 3-D booths, but with the high bandwidth demands of 3-D graphics, this is not something the general public is likely to find easy to use with a [14.4K-bit] modem," said Andy Schwab, vice president of Raleigh, N.C.-based consultancy Trinet Services, Inc. Trinet has set up Web sites for First Union Bank Corp., Northern Telecom, Inc. and others.

Visa and Worlds maintain that VRML+ works fine with a 14.4K-bit modem but acknowledged that response time could be a problem in some cases.

U.S. Bancorp is busy building a network to support PC-based on-line banking using Microsoft Corp. and Intuit, Inc. money management products. "But we're ready to look at new opportunities, and products like Visa's Electronic Courtyard might make it easier for our product managers to create content," said Linda Parker, vice president of emerging delivery services. ■



Visa's Electronic Courtyard *will offer 3-D banking and retailing in cyberspace.*

Cisco gobbles up Combinet to expand remote access line

By Jim Duffy

San Jose, Calif.

Cisco Systems, Inc. last week grabbed a bigger chunk of the telecommuting and Internet access markets by swallowing up Combinet, Inc. for about $114 million in stock.

Cisco acquired Combinet to broaden its ISDN-based remote access and telecommuting offerings, and to leverage the company's distributors and resellers.

Combinet is a privately held, Sunnyvale, Calif., maker of ISDN-based bridges, routers and servers. The company's annual revenue is about $15 million, according to market analysts.

Currently, Cisco offers ISDN Basic Rate Interfaces on its 1003, 2503, 2504 and 2517 remote access routers and routing hubs, pricing of which start at about $1,400.

The Combinet products will expand these offerings with devices for small office and residential users at price points — around $1,190 — appropriate for those markets, Cisco said.

"[The Combinet line] further extends it down for us," said Kevin Kennedy, director of marketing for Cisco's Access Business Unit.

Cisco will add features of its Internetwork Operating System routing software to the Combinet line to foster interoperability with the rest of Cisco's backbone, mid-range and remote access routers, Kennedy said. Currently, Combinet's devices route IP and IPX protocols.

"This is another example of Cisco getting very aggressive at the low end," according to Michael Howard, president of Infonetics Research, Inc. in San Jose, Calif. "Most of the remote access companies are eyeing the carrier and Internet service provider market. Internet access is a huge driver, and it's exploding and will continue to explode over the next several years."

> *"Most of the remote access companies are eyeing the carrier and Internet service provider market. Internet access is a huge driver, and it's exploding and will continue to explode over the next several years."*

Competitor Bay Networks, Inc. will counter Cisco's move next year, Howard said, when products are expected from its alliance with Microsoft Corp., aimed at adding routing capabilities to the Windows NT operating system. But right now, Bay cannot match Cisco product for product in the low end, specifically in ISDN, he said.

The acquisition is expected to be completed by the end of September. Combinet's management, employees and product line will be incorporated into Cisco's Access Business Unit, which is headed by Vice President and General Manager Don Listwin. ■

E-mail bug bedevils users of newly released VINES version

By Kevin Fogarty

Never buy a .0 product.

That's the message many Banyan Systems, Inc. VINES users were giving one another last week following the revelation that the recently released VINES 6.0 does not work properly with the most popular third-party electronic mail product for VINES networks.

A conflict between the rules server in LANshark Systems, Inc.'s SharkMail and the Intelligent Messaging backbone in VINES 6.0 keeps the rules server in the dark about messages that have been delivered, according to Scott Sharkey, president and chief executive officer of LANshark.

That means the rules server, called MailExpert, cannot execute rules to distribute new mail, and will not notify a SharkMail client that it has new mail.

Both companies were scrambling last week to identify the bug and produce a patch, which Sharkey said would probably be available late this week.

The bug ambushed the Ohio attorney general's office last week, causing net managers there to consider downgrading the VINES 6.0 server they set up the previous weekend.

Dirk Smith and Randy Overmeyer, who told their story on the Internet-based Banyan-L technical support news list, found that while they were running MailExpert, neither SharkMail nor Blue Mail clients would be notified of incoming mail. Blue Mail is the text-based simple E-mail application shipped with VINES.

They solved the problem by shutting off MailExpert. ■

Airsoft boosts performance for remote users

By Michael Csenger

Cupertino, Calif.

Managers plagued by complaints about poor performance from remote users dialing in to corporate LANs may find relief in a software product being introduced today by Airsoft, Inc.

Airsoft's Powerburst brings a new approach to the problem of latency and limited bandwidth over dial-up links by tweaking the way remote clients interact with applications.

Powerburst consists of agent software running on a dedicated PC attached to the LAN as well as client software on the remote PC.

Analysts said it could forestall upgrades to faster modems or ISDN lines, in some cases providing even better results than such a swap-out would.

"This is a really clever application that is going to do for dial-up performance what disk-doubler software did for data storage a few years back," said Tom Pincince, senior analyst with Forrester Research, Inc. of Cambridge, Mass. "There's nothing else like it out there yet."

Many vendors offer data compression and protocol spoofing to cut down on bandwidth consumption but do nothing to streamline the application itself, according to Mike Staiger, Airsoft's vice president of business development.

File interception

Powerburst, by contrast, intercepts the file system calls generated by file system-based applications. A single operation, such as opening an electronic mail message, may generate dozens of file system calls, each requesting a piece of information across the dial-up link. The time it takes to process those requests — compounded by bandwidth restraints — adds up to the latency that users experience when they run remote node applications.

Doubling a user's modem speed will not double performance, Staiger said. It generally results in just a 30% performance gain because the same number of file system calls still add a cumulative round-trip delay.

Powerburst boosts performance by caching information locally on the remote user's PC. It services the file system calls from that cache whenever possible, using software algorithms that determine when updated

See **Airsoft**, *page 53*

"Our billing was taking all weekend, so we had to make the NETWORK *work* FASTER. HP 100VG *not only speeds things up, it never asks for overtime."*

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Chris Smith
CIO
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*U.S. list prices as of 7/1/95; adapter prices based on 24-pack pricing. †In Canada, call 1-800-387-3867, Dept. 9562. Five-year on-site warranty; after five years return hub to HP. Power supply and fan covered by five-year on-site warranty only. HP 10/100VG adapters lifetime limited warranty, return to HP only. CRN, Windows NT and Novell logos applicable to HP 10/100VG adapters only.
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Object brokers gain fault tolerance features

By John Cox
San Francisco

Announcements scheduled for this week at Object World here show that the primary means of letting software objects work together over a network — the Object Request Broker (ORB) — is maturing quickly.

Iona Technologies, Ltd. in Dublin, Ireland, will announce the merging of its Orbix ORB with specialized software services from Isis Distributed Systems, Inc. of Marlborough, Mass., to create a fault-tolerant framework for distributed object applications.

Further evidence comes from PostModern Computing Technologies, Inc. in Mountain View, Calif. The company will unveil ORBeline 2.0, which it said is the first publicly available ORB that implements the complete Common ORB Architecture (CORBA) 2.0 specification.

The new Orbix + Isis product integrates Orbix, one of the few ORBs designed from the outset as a CORBA product, with the Isis Reliable Software Development Kit, including Isis' run-time and Message Distribution Service.

The combination ensures that customers can deploy mission-critical applications that will be continuously available, even in the face of several failures, whether they involve networks, computers or parts of the application, according to Larry Sherman, director of marketing for Isis, a subsidiary of Stratus Computer, Inc.

Calling on Isis

The Isis software developers' kit and other services have been available as procedural tools for programmers, who used them to copy application processes to two or more networked computers. The Isis run-time software would handle detecting failures and rerouting application requests.

In the new product, Sherman said, these capabilities have been put underneath the Orbix object-oriented interfaces. C++ programmers select from ready-to-use templates for the features they want, such as balancing a workload over several servers.

A small amount of additional C++ coding is needed for server-based objects, Sherman said, but none for client objects.

Orbix + Isis is available now from both companies, initially on HP-UX, AIX, SunOS and Solaris. A release for Windows NT and Windows 95 will be available soon. It will fully implement CORBA 2.0 by the end of the year.

A Unix license for one developer costs $12,000.

For ORBeline 2.0, PostModern has added full support for the new CORBA interoperability protocol, eliminating the extra step and the performance loss involved in translating between different protocols, according to Suresh Challa, vice president of business development.

Other changes, many of which are designed to extend the basic CORBA specification to support mission-critical applications, include support for shared memory and multithreading. The company has also improved and added to its collection of ORB administration and monitoring tools.

ORBeline 2.0 is available now on SunOS, Solaris, Windows NT, Windows 95 and SCO Unix. Other Unix systems will be supported later this year. The ORB on Unix costs $4,999, and run-time fees are priced at $250; on Windows, the price is $999, and run-time fees are $150.

☎Isis: (800) 258-0990; Iona: 011-353-1-668-6522; PostModern: (415) 967-6169.

Firms gear up for data warehousing

By Barb Cole

Two companies that have been quietly selling their data warehousing software as part of consulting services are gearing up to hawk stand-alone versions of their products.

Sinper Corp. next quarter will ship a version of its on-line analytical processing (OLAP) server that supports Windows NT and TCP/IP nets. The company, which has been in the OLAP business for more than 10 years, has just received a new round of venture capital to fuel its expansion, according to Richard Hu, Sinper's vice president of marketing.

Another company, Apertus Technologies, Inc., this week will ship the first shrink-wrapped version of its Enterprise/Integrator development tool for merging and replicating relational and nonrelational data into data warehouses.

Data warehouses pull data from networked applications and databases into a storehouse that can be used to run queries aimed at mining business trends.

Sinper's OLAP server, TM/1 Perspectives, is positioned against products such as Arbor Software, Inc.'s Essbase, which are used to construct multidimensional views of corporate data.

Unlike traditional OLAP servers, which store numerous multidimensional views of corporate data, TM/1 stores the OLAP data in RAM and calculates views on-the-fly based on the user's query.

Jim Bell, manager of manufacturing systems at Occidental Petroleum Corp. in Dallas, said with other OLAP servers, a 10M-byte database can grow 10 to 15 times that size as a result of storing views that may never be used.

TM/1's RAM-based retrieval also results in fast performance, according to long-time users. "Calculation time is super quick," agreed Joe Beres, net engineer at Uniroyal Chemical Co. in Middlebury, Conn.

Beta testers said the NT version, as well as Unix versions planned for the first quarter of 1996, will boost the scalability of TM/1 by as much as tenfold.

TM/1 Perspectives costs $9,970 for one server and five users.

Apertus' Enterprise/Integrator tool consists of a Windows NT-based development environment and run-time software. Database administrators use a graphical interface to define company standards for their corporate data. Based on these definitions, the software will gather data stored in various formats and present it in a cohesive way for use in a data warehouse.

In addition, the software can replicate data between operational systems and data warehouses, a boon to users engaged in mainframe-to-client/server migrations.

"It can take two years to migrate a legacy database to client/server, and during that time, we need to keep the systems in sync," said Enterprise/Integrator customer David North, director of data management at GTE Telephone Operations in Irving, Texas.

Enterprise/Integrator costs $18,000 for a development license. Starter kits, which include three development licenses and a run-time license, cost $130,000.

☎Sinper: (908) 755-9880; Apartus: (612) 828-0300.

Warehouse wizards

Company: Apertus
Based: Eden Prairie, Minn.
Founded: 1979
Employees: 370
1994 revenue: $55 million
Primary products:

- Enterprise/Access for building client/server interfaces to mainframe-based legacy systems
- Enterprise/Integrator for developing applications to merge data from heterogeneous systems
- Datastar/Data Center Hub LAN-to-IBM host gateway
- Express software for connecting multiple Unix systems and IBM mainframes to AS/400s.

Key competitors: In data warehousing space – Prism, Stanford Technologies and Prodea Software

Company: Sinper
Based: Warren, N.J.
Founded: 1984
Employees: About 25
1994 revenue: Analysts estimate about $8 million
Primary products: TM/1 Perspectives, TM/1 Spreadsheet Connector
Key competitors: Arbor Software and IRI Software (now owned by Oracle)

CA, Sun meld their products

Offer net, systems mgmt. in single CA-developed package.

By Jim Duffy
New York

Computer Associates International, Inc. and Sun Microsystems, Inc. last week announced that they will offer a new software package that blends the features of their respective systems and network management products.

The deal is indicative of CA's resolve to blanket the network management market with its systems management wares. CA and Hewlett-Packard Co. unveiled a similar arrangement earlier this year (*NW,* March 13, page 14). And CA and Microsoft Corp. announced an alliance to market a Windows NT version of CA's systems management product (*NW,* May 1, page 6).

Under the arrangement with Sun, CA will manufacture software that will integrate CA-Unicenter's systems management functionality with the network device management capabilities of Sun's Solstice SunNet Manager. It will also bundle in CA's CA-OpenIngres database as a single repository for network and systems information.

Sun CEO Scott McNealy (l) and CA CEO Charles Wang

Both companies will sell and support the product, which has yet to be named. It will run under Sun's Solaris operating system on scalable processor architecture (SPARC), Intel Corp. X86 and PowerPC workstation hardware.

From one of these workstations, users will be able to manage their distributed systems and network devices across an enterprise, the companies said. When monitoring systems, users will be able to receive and act on alarms coming in from networks devices; and when monitoring the network, they will also be able to respond to problems affecting systems.

"If you're on a Unicenter screen and you see an event up there that says my router went down, you click on that event and [up comes] SunNet Manager with that particular device being shown," said Yogesh Gupta, senior vice president of product strategy at CA.

Similarly, if a user is in SunNet Manager and Unicenter detects a system security breach, the user can access Unicenter's security screen by clicking on an icon that represents the affected system.

"The integration of the two products is great from our standpoint," said Dave Dubnick, manager of technology operations at CCH, Inc., a Riverwoods, Ill., publisher of legal periodicals. "We welcome it the same way we welcomed the HP OpenView/Unicenter cooperative agreement."

CCH uses SunNet Manager to handle data backup on Sun workstations and OpenView to provide the same function for HP hardware.

"CA's continuing to execute a brilliant partnering strategy that now has at least two-thirds of the open systems universe with HP and Sun," said Peter Kastner, an analyst at Aberdeen Group, Inc. in Boston.

Together, Sun and HP own about 60% of the Unix-based Simple Network Management Protocol platform market, according to International Data Corp., based in Framingham, Mass.

"The open question will be whether IBM wants to play in the open space or hold out for its own internal SystemView/Karat products," he said.

Pricing for the integrated CA-Unicenter/SunNet Manager product will start at $25,000. It will be available by the end of the year.

☎CA: (516) 342-5224; Sun: (800) 786-2441.

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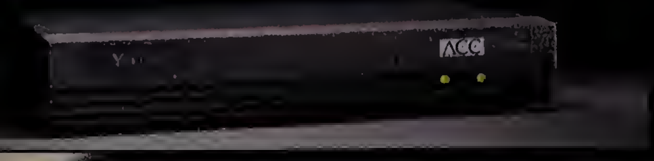

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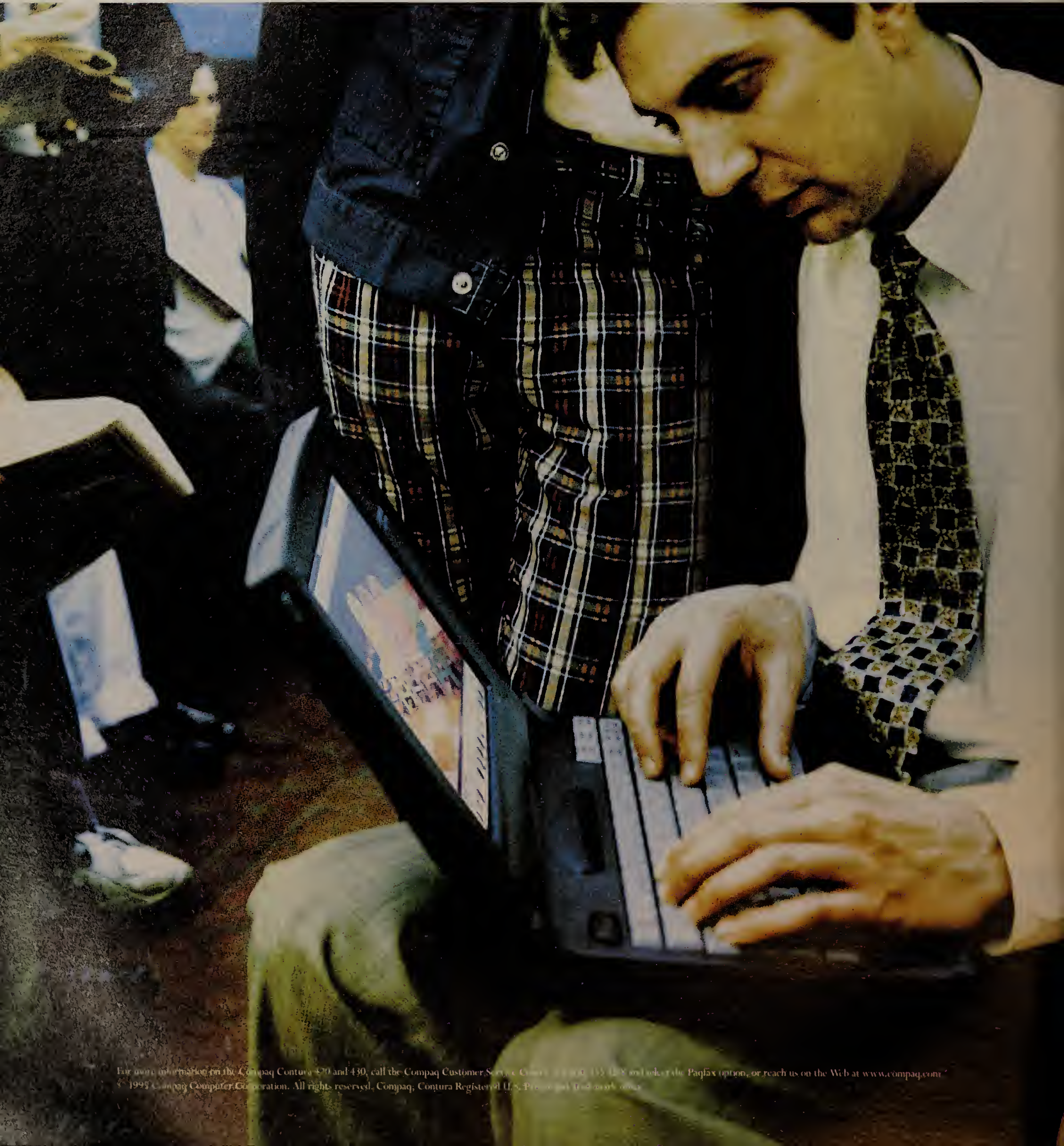

For more information on the Compaq Contura 420 and 430, call the Compaq Customer Service Center at [illegible] and select the Paqfax option, or reach us on the Web at www.compaq.com.

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■ *For a limited time, SNA users can purchase an* **IBM** *3746 Model 900* **front-end processor** *and convert it to an Nways Multinetwork Controller Model 950 for no additional charge upon availability of the conversion equipment — a savings of $5,000. The 3746 Model 900 must be ordered before Dec. 1, and installation must occur before Dec. 29.*

IBM: (800) 426-2255.

■ **AT&T's McCaw Cellular Communications, Inc.** *is beginning the construction of new Time Division Multiple Access digital wireless systems in the* **personal communications services** *frequencies it won in the federal spectrum auctions earlier this year. McCaw has begun digital switching equipment tests of AT&T Network Systems infrastructure equipment in Chicago and of L.M. Ericsson equipment in Atlanta.*

■ *Last week,* **NetSoft** *announced a new family of 5250* **emulation products** *for Windows PC-to-AS/400 Advanced 36 users. Included in the new offering is NS/Elite for the AS/400 Advanced 36, a terminal emulation package that supports up to 32 concurrent host sessions and NS/Router for the AS/400 Advanced 36, which provides Windows connectivity over IPX/SPX, TCP/IP, NETBIOS, 802.2 and Synchronous Data Link Control.*

NetSoft: (714) 753-0800.

■ **Wall Data, Inc.** *unveiled new versions of its Macintosh-to-host* **connectivity products,** *now called MacRumba. SNAps 5250 has been renamed MacRumba for AS/400, and SNAps 3270 is now called MacRumba for the Mainframe.*

Both products have a new interface with a tool bar of icons for common commands.

MacRumba for the AS/400 provides Text Assist, a text editor that helps users integrate with Office Vision/400 electronic mail.

Wall Data: (206) 814-9255.

AT&T, Lotus hit gold with Network Notes

By Annmarie Timmins
Parsippany, N.J.

After blowing their planned release date earlier this year, AT&T and Lotus Development Corp. last week took the wraps off their AT&T Network Notes and introduced their top nine customers.

Network Notes, which was announced in March 1994 and initially expected in January, puts Notes on AT&T's public network, giving businesses Notes without the attached infrastructure expense.

AT&T and Lotus assured customers last week that the wait will be worth it: Network Notes will be 15% to 25% less expensive than going it alone, said Kathleen Earley, vice president of AT&T's Business Multimedia Groupware Services.

Network Notes will run on several platforms, with the primary one being Novell, Inc.'s AT&T Network Connect Services, which will not be available until next quarter.

However, that will not disrupt the service, according to Lotus' Larry Moore, vice president of the firm's Interenterprise Communications Group.

The monthly cost of using Network Notes will fall between $25 and $80 per user, Earley said. The charge will depend on the number of users and locations, the amount of on-line time used and the number of users dialing in simultaneously.

Earley did not say how much users would pay for their initial connection.

By the next quarter, AT&T expects to make it less expensive for customers to dial in to the network, she said, by offering local dialing from 31 countries.

Early added that AT&T will enhance the service by also incorporating more Lotus products into the network. She named only Lotus' InterNotes Web Publisher, which converts Notes documents into the World-Wide Web's HTML format, but declined to say when the Web publisher might be added.

AT&T and Lotus introduced nine new customers last week and said there was interest from a significant number of others but would not be specific. The companies claim they can hook up additional customers within eight days of getting their technical specifications.

Of the nine newcomers, two are using Network Notes specifically to avoid having to establish and operate their own WANs.

McGladrey & Pullen, L.L.P., an accounting firm in St. Paul,

See **Network Notes,** *page 20*

The groundbreakers

Data Clearinghouse	Automating invoice procedures.
Elf Industries	Connecting corporate legal departments with clients and outside law firms.
Great Plains Software	Creating an electronic collection of data and pricing about the accounting software industry.
GroupVision	Creating EnviroNet, an electronic service that connects makers of recycled materials with interested buyers.
Immunet	Connecting its AIDS-related information so doctors, patients and researchers can collaborate.
Ingram Industries	Linking its resellers with vendors of computer software and hardware.
McGladrey & Pullen	Outsourcing its WAN tasks and reducing administration expenses associated with sharing company information with its employees and partners.
SandPoint	Offering its information delivery service, Hoover, to companies without a Notes infrastructure.
TitleLink	Automating real estate closings by routing and tracking documents electronically.

Rockwell advances enterprise security strategy

By Ellen Messmer
Seal Beach, Calif.

Rockwell International Corp. has devised a network security strategy built around the use of a single dynamic password server to check employee IDs, whether they dial in via LAN, telephone dial-up or the Internet.

Using a single Security Dynamics, Inc. Ace/Server at each Rockwell site for multiple types of access offers a key advantage. Thousands of Rockwell employees need only carry a single hardware card, rather than two or three, to generate a variable password.

The single authentication server also lowers installation and management costs, said Roy Alzua, Rockwell's program manager for telecommunications security. Each Ace/Server will be able to authenticate requests for LAN access, remote dial-up at 9.6K and 28.8K bit/sec, and remote Internet access.

Rockwell's decision to expand remote dial-in access from the corporate TCP/IP network and the Internet with proper security controls came as a result of demands from executives, salespeople and engineers asking for greater access to databases, electronic mail and computer files.

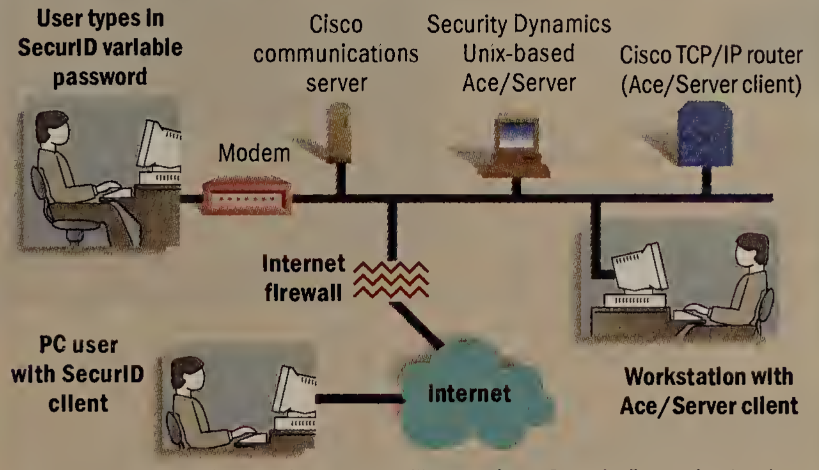
Since repeatedly used passwords are easy for hackers to intercept on the Internet, Rockwell is structuring its security strategy on a microchip-based card called the dynamic password token. This card generates a new password every minute, which is checked by an authentication server.

However, not all dynamic password authentication servers support multiple types of dial-up access or provide support for the Cisco Systems, Inc. communications products used by Rockwell. And not all network firewalls — a necessity for controlling access to and from the Internet — support dynamic password authentication.

Rockwell has found three firewalls that support the Ace/Server dynamic password con-

See **Rockwell,** *page 20*

ROCKWELL ROCKS WITH SECURITY STRATEGY


User types in SecurID variable password
Cisco communications server
Security Dynamics Unix-based Ace/Server
Cisco TCP/IP router (Ace/Server client)
Modem
Internet firewall
PC user with SecurID client
Internet
Workstation with Ace/Server client

Rockwell International's security strategy will use a single Security Dynamics Ace/Server at 30 locations to authenticate users employing remote LAN, dial-up or Internet access, as well as systems operators needing remote access to routers in order to configure them.

GRAPHIC BY SUSAN J. CHAMPENY

MCI seeks new financing plan for venture

By David Rohde
Washington, D.C.

Despite having hoards of cash on hand, MCI Communications Corp. is looking for a new way to raise the heavy sums needed to finance its MCI Metro venture, designed to offer users an alternative to regional Bell operating companies.

MCI Chairman Bert Roberts recently said the carrier is considering either a new class of stock or other methods to separate MCI Metro and its other untraditional businesses from its core telephone business.

The move reflects the difficulty of building competitive access into a profitable business. Competitive access providers (CAP) that report financial results — including the largest CAP, MFS Communications

See **MCI,** *page 16*

MCI

Continued from page 15

Company, Inc. — typically report losses because of huge expenses in building networks (see graphic, page 15).

Nevertheless, many Wall Street analysts see a bright future for MFS and similar companies, especially if Congress opens up the local market to more competition. MCI said its Metro subsidiary now offers some service to users in Atlanta, Baltimore, Boston, Cleveland, Dallas, Los Angeles, New York, San Diego, San Francisco, Seattle, Washington, D.C. and northern New Jersey.

But observers have questioned the ability of MCI Metro to easily gain rights-of-way and access to buildings normally afforded other CAPs through their affiliations with cable television or construction companies (*NW,* Dec. 19, 1994, page 1).

At its launch in January 1994, MCI said it would spend $2 billion on MCI Metro over two years, but it spent only $100 million last year and is committing $500 million this year.

MCI is considered to have one of the strongest financial positions in the business, having received more than $4 billion in new equity from BT last year and having just reported record earnings for the second quarter.

Wireless coast to coast

In addition, MCI announced that it has reached agreements with five more wireless providers — including the McCaw unit of AT&T — to resell their services.

The other four agreements are with BellSouth Corp., Frontier Corp., GTE Corp. and a joint venture partly owned by AirTouch Communications, the California-based spin-off of Pacific Bell's parent company.

Added to a recent agreement with Nationwide Cellular Service, Inc., the new deals give MCI full or partial wireless access to the top 100 U.S. markets.

By contrast, while AT&T is poised to start national advertising of wireless services, its cellular offerings are largely geared to locations where McCaw was based.

And Sprint is spinning off its fast-growing cellular division to concentrate on a personal communications services (PCS) network to be built around licenses won at a recent federal auction.

In a graphic illustration of the difference between MCI and Sprint's wireless strategies, Roberts said MCI is planning to write off all of its PCS activities as part of a charge against earnings that will result in a loss for the third quarter. ■

MOBILE COMPUTING

Group to focus on mobile and wireless mgmt. issues

By Jim Duffy

A group of mobile and wireless networking vendors last week announced the formation of a consortium to promote new network management standards for roaming devices.

Called the Mobile Management Task Force (MMTF), the group is spearheaded by Epilogue Technology Corp. and Xircom, Inc., and is comprised of nine mobile computing hardware and software vendors, including IBM and Compaq Computer Corp. (see graphic).

The aim of the group is to identify the administrative needs of laptop, mobile computer and palmtop users who need reliable access to computer networks, but on a sporadic basis.

The task force is an outgrowth of the Mobile Management MIB proposal brought forth by Epilogue and Xircom earlier this year. The Mobile Management MIB is a Simple Network Management Protocol Management Information Base that defines the manageable attributes of mobile computing devices.

But instead of defining management standards and duplicating the efforts of officially recognized standards-making bodies, such as the Desktop Management Task Force (DMTF), the MMTF will serve as a focal point for mobile computing management issues and as a lobbying group that can formalize the concerns of the industry and present them to the standards organizations.

"We wanted to make it nonthreatening to other work going on, like that of the DMTF," said David Preston, vice president and general manager of Epilogue. "If they have a solution, we will meld it into our MIB extension."

That may be easier said than done, according to analysts.

"Thirty to forty percent of the areas that [the MMTF] is looking at are already being addressed by the DMTF," said Tim Wilson, senior consultant at Decisis, Inc. in Herndon, Va. "They're going to need to coordinate [their work] so there's not any overlapping or contradictory standards being set."

Initially, the MMTF will focus its efforts on finalizing the Mobile Management MIB and bringing it to the Internet Engineering Task Force as an industry-blessed SNMP MIB. Once the Mobile Management MIB has been adopted, future MMTF efforts are expected to focus on the creation of a wireless network management MIB as well as identify other potential network management standards for mobile computer users. ■

THE MMTF LINEUP

- ▶ Compaq
- ▶ Epilogue
- ▶ Fujitsu Microelectronics
- ▶ IBM
- ▶ LanAire
- ▶ Motorola
- ▶ National Semiconductor
- ▶ Xircom
- ▶ Zenith Data Systems

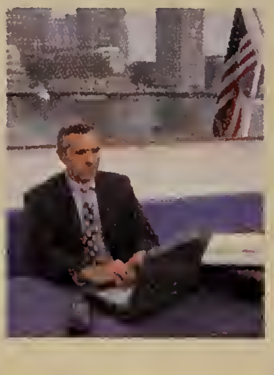
Firm gives disconnected users net options

By Joanie Wexler

Vienna, Va.

Mobile workers last week gained another option to ease the struggle and expense of staying physically connected to their corporate networks.

Relay Technology, Inc., following Digital Equipment Corp.'s recent lead, has devised client/server software that makes laptop computers appear to be connected, even when they are nowhere near a phone line or a cellular base station.



A business passenger *on the Boston Water Shuttle stays productive by using software that gives the look and feel of being connected to the corporate network.*

The company last week announced Relay/AnyPlace 2.0, which allows users to replicate the applications and network structures on their fixed PCs and networks on their laptops.

Then, using a "virtual drive" on the laptop, users can manipulate files, create electronic mail, check inventory and perform other functions without linking to the network, all using the same format and commands they would use if they were connected.

Files, E-mail and databases are all automatically synchronized the next time the user dials in over the telephone or analog cellular network.

The product operates on portable computers and servers running Microsoft Corp.'s Windows 3.1 or its Windows for Workgroups 3.11. It is available immediately for $49.95; the price will go up to $199 after Oct. 31.

With the offering, users can tap into NetWare, Windows NT or Windows for Workgroups networks.

AMCOM Business Centers Corp., a computer products distributor in West Chester, Pa., was a Relay/AnyPlace beta customer and is now using it in production mode. Salespeople get access to updated inventory data each night, and as they dial in during the day to retrieve E-mail, the latest inventory updates are automatically shipped to their laptop, explained Tom Vetterani, AMCOM president.

He said he chose Relay/AnyPlace over MobileWare Corp.'s remote computing product because MobileWare was limited to Novell, Inc. networks "and doesn't do on-line synchronization." This means users would have had to initiate the update transfers themselves when they dialed in, he said.

Relay's announcement closely parallels Digital's June entry into the mobile market with Mobilizer for Windows, a similarly targeted product that does do automatic synchronization. Mobilizer is Windows 95-compatible and will ship in October for $299 (*NW,* June 26, page 23).

The Digital product, though more expensive than Relay's, supports multiple wireless networks, including ARDIS, Mobitex, GSM and Cellular Digital Packet Data nets. Relay/AnyPlace is currently limited to the analog cellular net.

☎Relay: (800) 795-8674.

Microsoft, PCCA aim for wireless apps portability

By Joanie Wexler

San Jose, Calif.

The Personal Computer Communications Association (PCCA) recently took standards action that will eventually ease some user worries about application portability across incompatible wireless nets.

The group, made up of 50 vendors, agreed on wireless extensions to Microsoft Corp.'s Network Driver Interface Specification (NDIS) at a meeting here late last month.

The move will allow in-house and third-party developers to build applications that talk to modems running a number of air protocols. The specs also will allow tighter integration of upper layer communications protocols and wireless modems, which should render applications more efficient and mobile users more productive, association officials said.

Pick one, just one

One factor that has stunted the wireless market is users' concerns that they have to pick one emerging network because it is closely tied to the application and that the network they choose might not survive in the fledgling marketplace.

NDIS Wireless Extensions represents a standard wireless modem command set, which will let an application know it is talking to a wireless device, not a wired LAN adapter.

This means there will be a common look and feel across different types of wireless networks for gauging conditions particular to wireless devices, such as battery strength and whether the device is within a coverage area, explained Mike Schmalz, director of business development at wireless network operator ARDIS Co. and ARDIS' PCCA representative.

Such information is critical to users, who need to know when their devices are about to die and when they need to find a phone line.

The specs will be turned over to Microsoft at the end of this week so it can incorporate them into the NDIS specification, Schmalz said. The extensions are then slated to make it into the next major release of Windows NT, which Microsoft internally calls Cairo. ■

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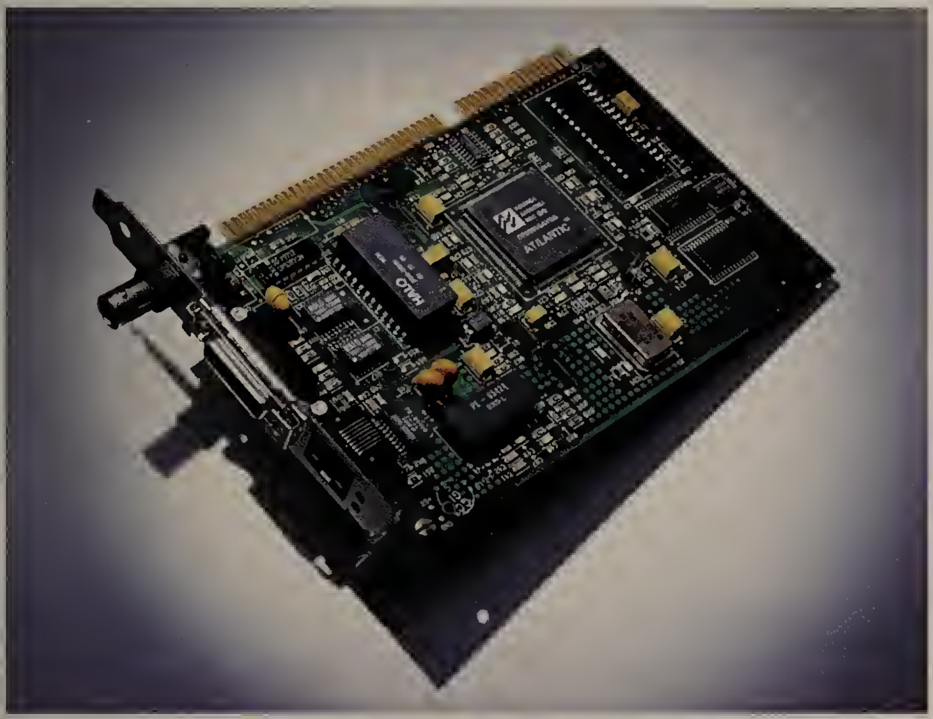

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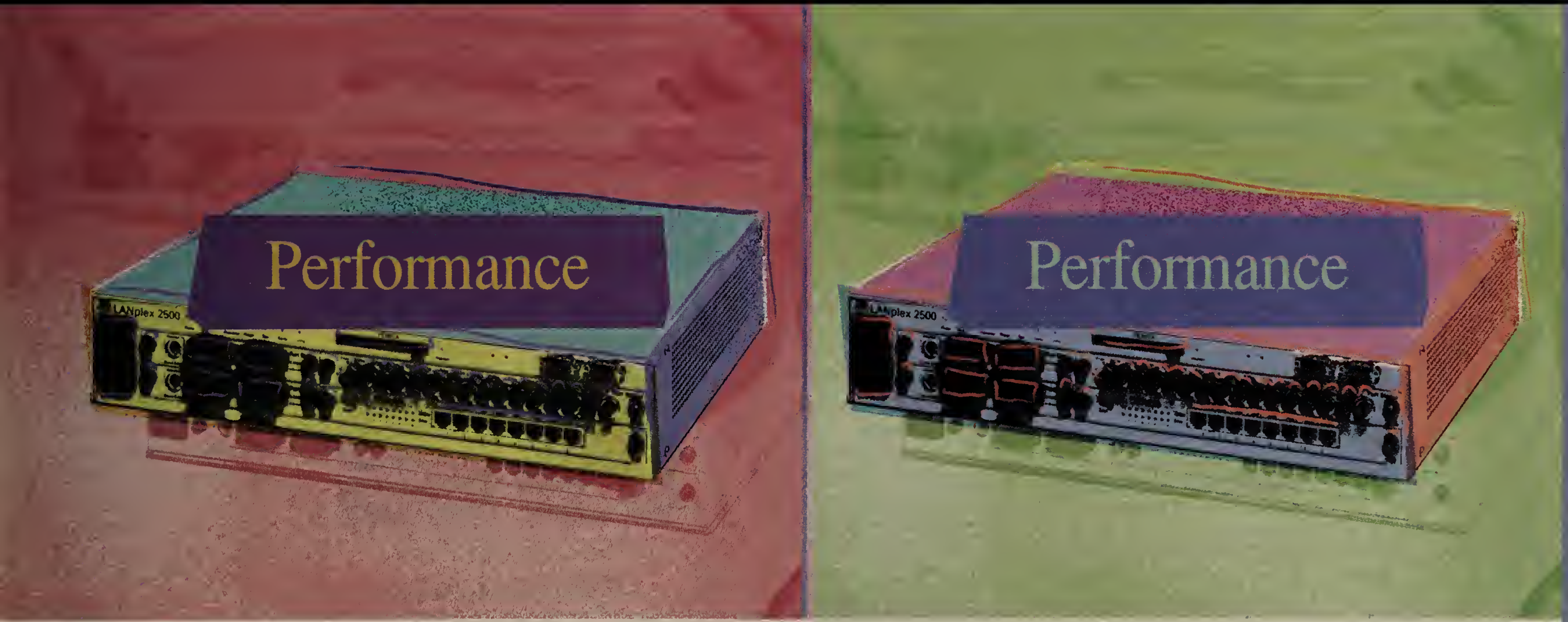

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NETWORKS THAT GO THE DISTANCE

Performance comparison based on maximum forwarding rate tests with zero packet loss. Tests performed at the Harvard Network Device Test Lab. LANplex 2500 forwarded 562,254 pps in a 1 FDDI-FDDI stream plus 8 Ethernet streams test (2/95). Cisco Catalyst 1200 forwarded 55,026 pps in a 6 stream Ethernet-to-Ethernet via FDDI test (8/94). Price comparison based on list price per switched segment.

Outsourcer adds software distribution to services mix

By Joanle Wexler
Burlington, Mass.

ACSYS, Inc. last week added electronic distribution software and virus management services to its NetGain Remote Office Support outsourcing portfolio, moves designed to ease the management of remote sites.

The company focuses on taming the volume of human resources needed to manage applications and equipment in far-flung sites (*NW,* Oct. 31, 1994, page 30). Building on that support, ACSYS will now run an analysis of how many software upgrades per month a company averages and how many sites need updating.

Farming out software distribution duties to ACSYS, as opposed to investing in their own software tools and manpower, should save some users as much as 40% on their monthly software upgrade bills, said Mark Williams, ACSYS director of marketing.

ACSYS runs the software distribution service off a Microsoft Corp. System Management Server, an interactive file-transfer product that runs over telephone, ISDN or T-1 links.

While many vendors will help users electronically distribute software upgrades to their own products, such as remote routers, few have agreed to take responsibility for everything from a network driver to a new desktop operating system version or application, said Arnie Tomaino, senior industry analyst at Dataquest Worldwide Services Group, a consultancy in Westborough, Mass., that follows outsourcing trends.

Such services are helpful to growing numbers of companies lacking the breadth of skills to manage highly distributed networks, he said.

"We cannot afford to put support [staff] in all of our satellite offices," said Larry Sisle, manager of technology integration at Symphony Health Services, a subsidiary of Integrated Health Services in Baltimore.

Symphony is piloting ACSYS support at five sites and has determined that outsourcing support for remote sites reaches the crossover point at about 30 workstations for bringing the function in-house.

ACSYS charges $450 per LAN per month for existing NetGain customers and $600 monthly per LAN for new customers. Its remote office management services, which include control of DOS, Windows, NetWare and a variety of desktop applications, run about $1,200 per month for a 15-station LAN. ■

Network Notes

Continued from page 15

Minn., could save as much as 50% by outsourcing its WAN administration and using Network Notes, said Robert Larson-Hughes, a principal with the company.

But cost savings is not the only benefit, Larson-Hughes said. With Network Notes, the firm will be able to focus solely on its clients, he added.

The SandPoint Co., L.L.C., an information services provider in Cambridge, Mass., will use Network Notes to bring its news and research delivery tool, Hoover, to businesses that cannot get it because they do not have a Notes infrastructure in place.

GroupVision, Inc., a Lotus groupware consultative partner based in Brookfield, Wisc., will use Network Notes to create a service that would not have been possible before.

Through the public network, GroupVision will connect creators of recycled material with interested buyers.

The service, called Enviro-Net, would have been considerably more expensive if done without the AT&T-Lotus network, said Allan Rakos, GroupVision's vice president.

He declined to give an exact savings amount but agreed with Earley's assurance that companies would save 15% to 25%. ■

COMMENTS?

See "How to reach us" on the Opinions pages.

Rockwell

Continued from page 15

trol function — Digital Equipment Corp.'s Seal, Trusted Information Systems, Inc.'s Gauntlet and ANS CO+RE Services, Inc.'s Interlock.

Rockwell's security division will install about 30 Ace/Servers and mandate that business users employ the corporate firewall system.

You've come a long way

The new user identity authentication process replaces the older authentication software Rockwell added to its Micom Communications Corp. data switch in 1985. The 1,400 Rockwell employees who dial in remotely to the Micom switch are primarily limited to VT-100 access to Rockwell's mainframes and VAXes.

"We didn't have a TCP/IP network back then, but now we can connect remote users to LANs and PCs that have TCP/IP support," Alzua said.

To give Rockwell employees access to Rockwell resources from the Internet, Rockwell is installing an application layer firewall and security-enhanced Cisco routers to check for IP spoofing, which is an intruder technique to make network packets appear as if they came from a permitted source.

The new application layer Internet firewalls replace older filtering routers set to restrict inbound services, such as File Transfer Protocol and telnet, or allow communications only between predefined source and destination addresses.

Rockwell's new application layer firewalls will let Rockwell network managers specifically define permitted inbound and outbound services tailored for each employee, according to Alzua. ■

BusinessBriefs

Cascade Communications Corp. last week enlisted IBM's worldwide service organization to provide on-site maintenance and technical services for its public and private enterprise users. Under terms of the service agreement, Cascade will be the primary point of contact for user service calls, but upon determining the exact problem, Cascade will dispatch an IBM service representative to handle the on-site visit and subsequent repair.

Wireless communications company **Pro-Net, Inc.** announced last week the signing of a letter of intent to acquire the assets of Page One/Airtel, a Georgia-based paging operation with approximately 30,000 subscribers.

Unisys Corp. was awarded a three-year, $23 million contract to manage and maintain the desktop workstations and network equipment of **TSB Bank,** the sixth-largest bank in the U.K.

WAN MONITOR

Slow and easy wins race to wire desktops

Many companies cannot yet justify an ATM WAN and assume that very high speed facilities to the desktop will be the first logical step in their migration path.

Is this the logical step, and if so, should you plan on Category 5 wiring or fiber? Good question, but when one of the founders of a company that specializes in setting up computer facilities says you can wait on these wiring upgrades, it makes you wonder how quickly the question needs to be answered.

Paul Andres, managing director and a founder of ModTap, a structured cabling manufacturer and a subsidiary of Molex, Inc. in Harvard, Mass., said there is too much pressure on companies to install Category 5 wiring immediately. Category 5 specifies a plenum-rated cable that can transmit data at speeds up to 100M bit/sec but at a cost of up to 50% less than installing fiber. Category 5 actually has the capacity of transmitting up to 155M bit/sec but only for a limited distance of 100 meters or less. During the past year, many companies aggressively marketed this type of cable, cajoling MIS directors into believing that if they cannot support ATM to the desktop now, they may be left behind.

Daniel Briere and Christine Heckart

Most companies will eventually need high speeds to the desktop, and this may involve Category 5 wiring. But Andres noted that the present horizontal infrastructures from the server to the desktop support the current applications for many companies just fine. In fact, the 10M bit/sec that Ethernet supports provides enough bandwidth for 10 to 40 workstations in most organizations.

The wiring decision usually comes to the fore when performance is under fire, and ModTap frequently finds itself consulting with customers that are trying to solve these performance problems. It's the same old story, really: As the network gets larger and applications become more integrated, performance can suffer.

A simple solution is to upgrade to Category 5 cabling and upgrade all the network interface cards for more throughput.

Not so quick. First you should try taking a fresh look at the performance problem.

Many networks become bogged down due to a very high volume of traffic between servers and hubs. This may be where you should first invest in higher speed networks. For example, moving to switched Ethernet hubs can dramatically increase performance. Switched Ethernet dedicates a 10M bit/sec channel to each workstation and duplex Ethernet can double the throughput.

Eventually, you may need to support high-bandwidth connections to the desktop, but most of today's applications do not demand more than 100M bit/sec. As more applications integrate voice, data and video on the desktop, you may be able to cost-justify Category 5 cabling.

Another development that may spur the need for a wiring upgrade to the desktop is the cost of disk storage. As users want and demand more information, someone has to store it and index it. Andres suggested that we will see intelligent agents emerge in workstations that use a flash memory storage device.

These intelligent agents would go to several sources and gather the information you want. They would store the information for only an hour or two. This implies, of course, that the agent would gather the information again if you needed it in the future.

This type of application could obviously increase your bandwidth requirements.

Category 5 cable will continue to gain prominence but not immediately. The time to upgrade cable is when you renovate your site, which most companies do every five years. You can expect to pay 20% more for Category 5 vs. Category 3 cabling, but in the process, you gain a facility that will support future growth.

Briere is president and Heckart is director of broadband with TeleChoice, Inc., a consultancy in Verona, N.J. They can be reached at danny_briere@telechoice.com or christine_heckart@telechoice.com. They will share this space with Scott Bradner, whose column will appear next week.

Local Networks

Covering: Operating systems • LAN management
Hubs • Adapters and other equipment

Briefs

Hewlett-Packard Co. *of Palo Alto, Calif., expects to ship next month HP SureStore Optical 300st, a* **magneto-optical jukebox** *capable of managing 300G bytes of data on as many as six optical drives and 238 optical disks.*

The first implementation will run with Unix, NetWare, Windows NT and DOS, and support 1.3G byte, 5.25-inch magneto-optical drives.

Pricing starts at $65,000 for a six-drive system with a capacity of 309G bytes.

HP: (800) 826-4111.

Meridian Data, Inc. *of Scotts Valley, Calif., plans to ship this month* **CD Net 1.0 for Windows NT,** *which enables network managers to manage CD-ROM resources through a Microsoft Windows NT Server.*

Net managers can let users access as many as 56 CD-ROMs through a single disk partition or can group several CD-ROMs in a single logical drive. CD Net supports clients running Windows 2.X, DOS, Windows 95 and IBM OS/2.

The software alone will be priced at $1,995 for an unlimited user license.

The software also will be bundled with Meridian's seven-CD-ROM CD Net 914 system, which is priced at $12,795.

Meridian: (408) 438-3100.

Intel Corp. *has begun shipping an update to its* **Netport-Express print server family,** *supporting multiple operating systems and integrating it with network management consoles from other vendors, including Novell, Inc.'s ManageWise.*

NetportExpress XL Print Server supports Microsoft Windows NT and native NetWare Directory Services for NetWare 4.X. It also adds Simple Network Management Protocol support. NetportExpress XL Print Server is priced at $599 for Ethernet configurations and $799 for token-ring.

Intel: (800) 538-3373.

Grand Junction releases next-generation switches

Company also reduces pricing of existing desktop switch.

By Jodi Cohen
Fremont, Calif.

Grand Junction, Inc. last week announced two next-generation Ethernet switches and slashed by half the pricing for an existing desktop switch.

The price for Grand Junction's FastSwitch 10/100 is now $148 per port, a price that makes the switched 10M bit/sec device more competitive with 10Base-T switches. This reduction also may prompt some users to adopt switching rather than hubbing for desktop connections (see story, page 22).

FASTSWITCH 2100 AND 2800 FEATURES

- Offer 25 10M bit/sec switched Ethernet ports with at least 2 high-speed ports.
- Support multiple MAC addresses per port.
- Boast a forwarding rate of 450,000 packet/sec.
- Are compatible with any SNMP-based management platform.
- Provide VLAN support.

"This puts the cost of a desktop switch at less than two times the cost of a managed 10Base-T hub, making the move to private Ethernet affordable," said Jean Young, product-line manager at Grand Junction.

Along with the price cuts, Grand Junction unwrapped the FastSwitch 2100 and 2800, which offer 25 switched 10M bit/sec ports and at least two high-speed ports for server and backbone connections. The new devices also support multiple media access control (MAC) addresses on every port.

Previously, Grand Junction switches only handled one MAC address per port, which was good for users requiring dedicated Ethernet links to individual desktops. By supporting multiple MAC addresses at each port, however, the new switches can support multiple devices on the same switched link — the difference between private Ethernet and switched Ethernet.

Where the switches differ is in the number of MAC addresses supported as well as the high-speed connection options offered. FastSwitch 2100 has two fixed 100Base-T ports, while FastSwitch 2800 offers two high-speed expansion slots for FastMate 100Base-T, Fiber Distributed Data Interface and, in the future, Asynchronous Transfer Mode modules.

In addition to offering users increased backbone and configuration flexibility, FastSwitch 2800 supports as many as 8,192 MAC addresses, while FastSwitch 2100 supports 1,024 MAC addresses.

The new switches can be used in conjunction with Grand Junction's existing hubs and switches. For example, a customer could employ a FastHub 100 to link several FastSwitch 10/100 ES-desktop switches and provide a link to additional private Ethernet users or other hubs through a FastSwitch 2100.

The FastSwitch devices have a forwarding rate of more than 450,000 packet/sec and low latency of 31 microsecs between 10Base-T ports. The switches also can support as many as four virtual LANs per switch, which are defined by port groupings.

Users can manage the new switches using any Simple Network Management Protocol-based management platform or a menu-based console for out-of-band management. In addition, the switches offer a diagnostic mode for monitoring the traffic of a single port, a group of ports or the entire switch. Grand Junction has plans for a Unix-based graphical interface management application, which will be available in the fourth quarter.

Both FastSwitch 2100 and 2800 are available now, and pricing starts at $6,295.

©Grand Junction: (800) 747-3278.

Vendors polish remote LAN access products

By Michael Csenger

Simware, Inc. and Ascend Communications, Inc. have announced enhancements and new capabilities for their remote LAN access product lines.

Ascend has enhanced its ISDN support and added IPX routing to its Pipeline and Ascend Max remote access platforms, the company said last week. Ascend already supports IP routing, along with PPP, frame relay and a prestandard Multichannel PPP, which can aggregate several low-speed access links into a single high-speed pipe.

But until now, the Pipeline and Max products could support IPX only as a bridged protocol. With IPX routing, "People in Novell environments can now use our products as part of a routed network, which really all boils down to greater flexibility," said Bernie Schneider, Ascend's vice president of marketing.

In addition, Ascend has added support for the V.110 and V.120 ISDN standards. V.120 allows ISDN terminal adapters to be connected directly to the asynchronous serial ports of users' PCs. ISDN is a synchronous protocol, and without V.120, users had to install asynchronous adapter boards in their PCs, Schneider said. V.110 is a similar protocol used internationally.

Simware simplifies software

Simware today will announce new capabilities for its A2B remote client software, which han-

See **Remote LANs,** *page 22*

Apple makes intros at MacWorld

By Peggy Watt
Boston

The bustling MacWorld Expo here last week had plenty to offer network administrators, as a variety of net-savvy Apple Computer, Inc. Macintosh systems, software and accessories were unveiled amid some 350 new product introductions.

Apple furthered its own cause with the rollout of three PCI bus-based Power Macintosh systems, while third-party developers showed off new or enhanced security, 10Base-T networking and storage management tools for customers supporting networked Macintoshes.

The Power Mac 7200, 7500 and 8500 all sport Motorola, Inc. Reduced Instruction Set Computing processors running at 75 MHz and up, with built-in CD-ROMs and PCI buses. Prices range from $1,699 to $4,199, depending on the chip speed, rancom-access memory and storage capacity.

All the new systems ship with MacOS 7.5.2, which supports Apple's Open Transport networking and is bundled with AppleTalk and TCP/IP protocols.

Apple also announced September availability for MacX 1.5, its X Window System, which is accelerated for use on the Power Mac. With MacX, users can run network-based X Window System applications and Macintosh programs on a Macintosh. MacX 1.5 supports the X Window System standard Version 11 Release 5. New menus let users customize their desktops and launch Unix applications by the same point-and-click functions they use with Macintosh programs. They can also cut and paste between the environments.

MacX 1.5 requires a Macintosh with at least a 68030 processor and System 7.1 operating system.

It will be available in several configurations, ranging in price from $295 for a single-user

See **Apple,** *page 22*

MacWorld product highlights

Company	Product	Description
Apple	Power Macintoshes 7200, 7500 and 8500	Net-ready RISC systems
	MacX 1.5	X Window System server
Magna	Empower Professional 5.0	LAN security
Interex	EH-9	9-port 10Base-T hub
	10BaseT Work Group Hub/Transceiver	10Base-T transceiver
	SPM-4	Macintosh serial switch
Atemi	NetShade 1.1	Security/encryption system

NPA prepares new program for multivendor certification

By Kevin Fogarty
Provo, Utah

The Network Professional Association (NPA) this week will announce a new certification program designed to put a vendor-independent stamp of approval on the skills of network managers.

The Certified Network Professional (CNP) program will be a more reliable certification than existing programs because it measures the skills of candidates in working with products from more than one vendor, said Brent Done, certification director for the NPA.

Existing programs, such as Novell, Inc.'s Certified Novell Engineer (CNE), Microsoft Corp.'s Certified Systems Engineer and Compaq Computer Corp.'s Accredited Systems Engineer are fine as far as they go but do not measure how well a technician could support a typical network, which may contain products from all three companies and more, Done said.

The CNP will differ from vendor-specific certifications by requiring at least two years of work experience before certification and by requiring members to renew their certification each year by accumulating a set number of continuing education credits.

The requirements are a way to get around the problem of "paper CNEs," people who have passed the test for a CNE or other certification but who lack hands-on experience or whose training is out-of-date.

To be certified, candidates must pass a test to demonstrate an expertise in client and network operating systems, microcomputer hardware, networking protocols and network topologies such as Ethernet.

They must also hold certifications from at least two vendors from a list that includes Banyan Systems, Inc., Cisco Systems, Inc., the CNX Consortium, Compaq, IBM, Lotus Development Corp., Microsoft and Novell.

The continuing education requirement is 20 CNP units per year, with varying numbers of credits being awarded for CNP-approved seminars, self-study and formal education courses.

The test itself will be given in October at a cost of between $80 and $125 at Drake Prometric testing centers nationwide.

©NPA: (801) 379-0330.

Remote LANs

Continued from page 21

dles connectivity over remote LAN access links. From a single connection to the central LAN, A2B lets remote users access attached mainframes and minicomputers, as well as any TCP/IP hosts or Internet gateways. New features include Remote LAN Client, QuickStart, and several logon and automatic script enhancements.

Remote LAN Client lets users employ A2B with any vendor's remote access hardware. Many hardware vendors provide their own client software, which users can override using the Remote LAN Client feature. The A2B software will recognize any preexisting client software and prompt users to replace it if they wish, letting them take advantage of Simware's simpler and more robust feature set, the company said.

QuickStart is an automated installation feature that simplifies manual configuration and lets users select applications to be automatically launched when remote connections are dialed.

Simware's enhancements are part of the new A2B Version 3.2 release, which will be available in September for $495 per copy.

Ascend's enhancements are part of its new Release 4.5 software, available now as a free upgrade.

©Ascend: (510) 769-6001; Simware: (613) 727-1779.

Apple

Continued from page 21

license to $4,495 for a 20-user license.

Macintosh LANs also got enhanced security functions with the release of Empower Professional 5.0 from Magna, Inc. of Campbell, Calif.

The revamped network-based security product lets administrators assign privileges to users and groups, controlling access to the system folder, control panel, Apple menu and individual applications. In addition, it supports copy protection and several levels of encryption, according to Ron McCandlis, director of sales and marketing for the firm.

A graphical front end replaces the control panel used in the previous version, and, at customers' request, Magna added another user level below administrator, so workgroup managers can control some access functions.

Empower Professional 5.0 is priced at $219.

Additionally, Magna is developing a Windows version, McCandlis said. Scheduled to ship by year-end is Empower Remote, which allows remote administration of security functions, synchronization and license metering.

Other LAN announcements include:

■ **Interex Computer Products, Inc.** of Witchita, Kan., introduced several 10Base-T products. The rollouts include the EH-9, which is a nine-port 10Base-T hub, and the 10BaseT Work Group Hub/Transceiver.

The EH-9, priced at $159, supports as many as eight network devices, including a separate 10Base2 thinnet LAN or backbone.

The Work Group Hub/Transceiver can act as a 10Base-T receiver, and the transceiver component is compatible with all Macintosh systems and peripherals through Apple's Ethernet port.

The device can be expanded to 14 nodes per network and is priced at $149.

Interex also released the SPM-4, a Macintosh serial switch equipped with four ports that support standard serial and GeoPort-compatible peripherals. SPM-4 is priced at $99.95.

■ **Atemi Corp.** of Champaign, Ill., released NetShade 1.1, an encryption system intended to shield network transmissions from eavesdropping and interception. The product was previously called NightShade.

The update features a new user interface designed to make the program easier to configure and that supports the Data Encryption Standard. Through September, NetShade 1.1 carries an introductory price of $199 for a two-user package.

©Apple: (800) 538-9696; Magna: (800) 631-6400; Interex: (316) 524-4747; Atemi: (217) 352-3688.

NET RESULTS

Grand Van Winkle wakes up to market reality

If you thought that the world came to a screeching halt last week, you were right.

The cause? Grand Junction Networks, Inc. admitting that it's OK to build a LAN switch that supports multiple media access control (MAC) addresses and provide a network management application to control LAN switches.

With one announcement, Grand Junction finally addressed the two biggest knocks on its product line: Its switches only supported one MAC address per port, and it offered no network management tool.

Skip MacAskill and Melinda Le Baron

For the past two years, Grand Junction was the only vendor representative in the desktop switching market. As a start-up, it needed to establish itself and gain a market reputation, so it focused on an area where it had no competitors.

Other switch providers just smirked when Grand Junction announced its one MAC per-port strategy, but the company managed to do quite well by appealing to a small user base that required dedicated Ethernet links to individual desktops.

The company also took a leadership role with the development of fast Ethernet technology, providing 100M bit/sec Ethernet uplinks for its FastSwitch desktop switches.

While the company has been generally dismissed as a niche player by numerous industry types, we began to see some major players eyeing the desktop market earlier this year. 3Com Corp., for example, recently announced the LinkSwitch 1000 product line, which for all intents and purposes was 3Com's answer to Grand Junctions' FastSwitch line.

3Com will never admit that publicly because it would mean giving Grand Junction and its market niche credibility.

While it was gaining some respect in its own space, Grand Junction also came to the obvious conclusion that, in order to grow its revenue base and open up new sales opportunities, it would have to launch an assault on the mainstream switching market by developing a product that could support numerous LAN segments.

That meant the company would have to offer some type of network management application because robust management is a necessity when you implement switching in workgroups and backbones.

We know, we know. Yet another vendor entering the workgroup switch space. Yawn. Roll the eyes. Sigh audibly.

But Grand Junction's entry is different. It is not just another start-up, and it didn't acquire someone else to get an instant presence. Grand Junction brings a high degree of credibility to this market because it has been doing Ethernet switching for several years and it is one of fast Ethernet's founding fathers. It has experience with switching that should give it an advantage over some other folks in this hot networking area.

The fallout of Grand Junction's move into the workgroup space, however, will be felt in the desktop switching market.

In order to keep pricing competitive and maintain a comfortable ratio between low-end desktop switching and mid-range workgroup switching, Grand Junction will reduce prices for its line of existing switches by 50%, dropping per-port costs down to less than $150 (see story, page 21).

That action means users who are looking for a basic, fixed-port, low-end hub can now look at putting in a switch for about the same price. While they might not need a dedicated 10M bit/sec to each desktop, it certainly looks like a worthy investment since a switch provides scalability for future needs.

Grand Junction's acknowledgement of a market beyond desktop switching has restored our faith in mankind. Just imagine what it would be like if all the vendors started dealing with the realities of the market and actually told the truth in every third press release.

Hey, we all have dreams, right?

MacAskill is a senior research analyst and Le Baron is a research director in Gartner Group, Inc.'s Network Computing Infrastructure group. They can be reached at (203) 316-1111 or at inquiry@gartner.com.

VLANs set to enhance their value through policy-based management

By Jodi Cohen

Much of the hype surrounding virtual LANs is focused on making networks more flexible, but the real value of VLANs may just wind up centering on the constraints they will eventually impose on networks.

Virtual LANs are software-defined groups of LAN end-stations that communicate as if they were on the same wire, even though they are spread out on different LAN segments throughout a building or campus. Aside from the flexibility of VLANs, one of the biggest benefits users will gain as they migrate to switched networks and start implementing VLANs is policy-based management.

Policy-based management allows net managers to enforce rules and constraints that can ensure high service quality for certain applications and minimize problems in dealing with moves, adds and changes. Although most vendors' VLAN strategies are not yet mature, the top internetworking vendors are readying VLAN management capabilities that will likely be the key differentiator in the switching market (see graphic).

Policy-based management lets net managers assign priorities to different types of application traffic, with higher priority going to core business applications. If an outage narrows net capacity, for example, then policies ensure that those business-critical applications get necessary bandwidth.

Top vendors tip VLAN hand

Company	Method for VLAN definition	RMON	Policy-based management
3Com	Port	Yes	Unclear
Bay	Port, IP address	Partial	Moderate
Cabletron	MAC address	Yes	Strong
Cisco	MAC	Yes	Unclear
Digital	Port, MAC and IP addresses	Yes	Strong

GRAPHIC BY TERRI MITCHELL

SOURCE: MCCONNELL CONSULTING, INC., BOULDER, COLO.

"With VLANs and switching, we will be able for the first time to manage our environments from a business perspective," said John McConnell, president of McConnell Consulting, Inc. in Boulder, Colo.

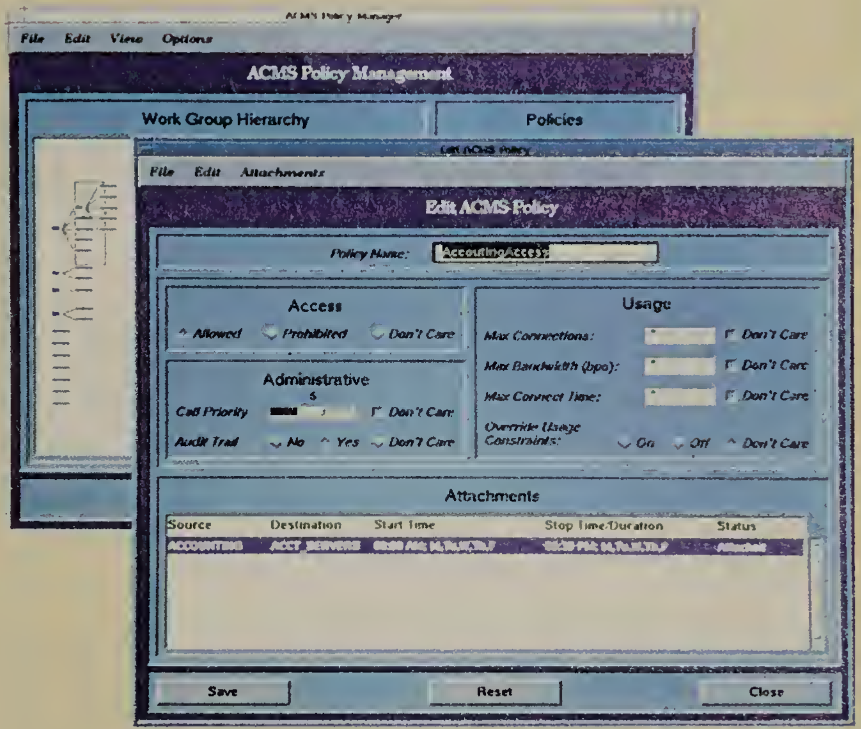
Types of policies

VLAN management capabilities are expected to debut during the next few years that will allow net managers to define policies that limit the time of day a user can be on the network, the amount of bandwidth a user or application should get, and, for security purposes, which applications he can access.

In addition, policies can be used to limit what administrators can do to the net and when. For example, just because it is possible to create a VLAN by simply dragging and dropping node icons across a graphical user interface, it does not mean that network definition should be done during peak production hours.

Downstream, users may even see policies for defining network topologies, allowing them to set up the network one way at night and a different way during production hours for increased efficiency.

But Val Sribar, service director at META Group, Inc. in Reston, Va., said the real value of policy-based management won't be realized until policies can be automatically defined, rather than having to be administered manually.



Policy Name: AccountingAccess

Cabletron's VNS *management application uses policy-based management to set up and administer VLANs.*

"If you don't get automated tools that figure out what should be put where and can do it on-the-fly based on policy constraints, then the VLANs are going to be useless," Sribar said. "You must have policies to dictate how the network automatically reallocates resources."

VLANs vary by vendor

Sribar and McConnell both give Cabletron Systems, Inc. high marks for its commitment to policy-based management. Using Cabletron's Virtual Network Service (VNS), users will be able to exert policy control over connections.

Administrators can use time of day, application profiles and security information to constrain the VNS activities (see screen shot).

Digital Equipment Corp. also is on the right track, according to McConnell. Under Digital's enVISN architecture, policy agents that are responsible for making sure the switch carries out quality of service, security and membership policies will be spread throughout the switching fabric.

"If you don't get automated tools that figure out what should be put where and can do it on-the-fly based on policy constraints, then the VLANs are going to be useless. You must have policies to dictate how the network automatically reallocates resources."

Other switching players, such as 3Com Corp., Bay Networks, Inc. and Cisco Systems, Inc., face challenges in developing policy-based management tools because they have to integrate switching and VLAN technology gained through one or more acquisitions.

Cabletron and Digital "will have an easier job delivering [VLAN management] because it's all their own technology — they didn't get it through acquisitions," according to McConnell. "They have a lot less to integrate, rationalize and harmonize."

In order for policy-based management to be effective, switches must also have sophisticated monitoring tools.

Users will need Remote Monitoring (RMON) capability — which many switching vendors are already building into their devices — to understand the activity in the network in order to set up and enforce meaningful policies.

Users should also expect some RMON capability to be embedded in the switch to collect basic statistics while other information is exported to external tools. These outside tools will put together all of the information from multiple switches to provide a VLAN view, as opposed to a single-switch view.

McConnell said that by combining policy-based management with RMON capability, net managers will be able to run more efficient networks.

"VLAN management will address cost of ownership, management staff productivity and the ability to deliver the kind of performance and support for the business that's never been established before," McConnell said. ■

Financial firm finds freedom with VLANs

While there is no shortage of people talking about virtual LANs, Jeff Marshall is one of only a handful of users actually implementing VLANs in his network.

Marshall, senior managing director of communication technologies at Bear, Stearns & Company, Inc. in New York, has been using Agile Networks, Inc.'s switches with VLAN capabilities for the last six months. The financial services firm plans to create a complete relational network — virtual workgroups based on protocol type and subnetwork address — by the year 2000.

Bear, Stearns is using VLANs to simplify moves, adds and changes, and to make it easier for users to access different server farms and networks.

"VLAN technologies allow us to exercise a freedom in networking that we really haven't had before," according to Marshall. "They take the first stab at building relationships to the network user."

Bear, Stearns is in the first phase of a plan to support voice, data, video and image services on the same net.

Under this model, users will be assigned to VLANs depending on the types of network services they need.

"For the first time, users aren't plowing their way through a net, trying to figure out where everything is," Marshall said. "The network will bring the appropriate services to the user depending on his VLAN."

Marshall said his firm initially implemented VLANs to save money and time in dealing with all the changes that inevitably occur in networks. But Marshall said VLANs are allowing the firm to cut back on management staff because VLANs have lessened the workload on administrators.

"Managing with technology is probably the best cost-savings program," he said.

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Briefs

■ **Aspect Software Engineering, Inc.** *of Honolulu this month will ship a new tool that connects Windows NT-based databases to World-Wide Web servers. Priced at $695,* **dbWeb** *links Open Database Connectivity data sources and Web servers, letting users mine for database information across the Internet using common Web browsers.*

Aspect: (808) 539-3782.

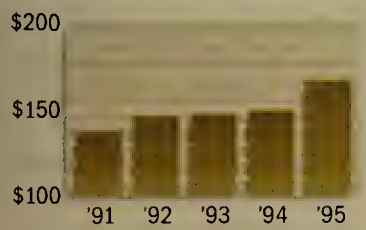
■ *Two vendors of data warehousing software last week agreed to develop a* **common interface** *between their products.* **Pilot Software, Inc.** *of Cambridge, Mass., and* **Cognos Corp.** *of Burlington, Mass., will develop a link between Pilot's Lightship on-line analytical processing (OLAP) Server and Cognos' PowerPlay.*

The companies said the interface will make it easier for users to deploy OLAP applications. Cognos will include the interface in future versions of PowerPlay, the company's $695 front-end software.

Separately, Cognos announced that it has signed a deal with **Angoss Software, Inc.** *in Toronto, to embed technology from Angoss Knowledgeseeker data-mining software in future versions of Cognos Impromptu and PowerPlay.*

Cognos: (617) 229-6600; Pilot: (617) 374-9400.

Cognos' total revenue in millions:



■ **Information Dimensions, Inc.** *of Dublin, Ohio, has integrated its* **BASISplus document** *database with Netscape Communications Corp.'s Netsite Communications Server and Netsite Commerce Server.*

The offering is aimed at companies that wish to distribute documents across the World-Wide Web.

Information Dimensions: (614) 761-8083.

Sybase puts its IQ add-on to the test

By Barb Cole

Emeryville, Calif.

Sybase, Inc. last week announced that it is beta-testing Sybase IQ, a database add-on that Sybase claims significantly increases the speed of queries in data warehousing applications.

The experience of users seems to back up the vendor's claim. On certain on-line analytical processing (OLAP) queries, Sybase IQ will return results up to 100 times faster than a stand-alone SQL Server database, according to some of the 40 beta customers.

Bit-Wise index

Sybase IQ does this by placing what the company calls a Bit-Wise index on each piece of data, which it then scans for fast retrieval, according to Erin Kinikin, senior director of data warehousing at Sybase.

These Bit-Wise indexes are unlike traditional indexes, which tend to take up significantly more space than the database itself and are not optimized for OLAP. These OLAP-oriented Bit-Wise indexes occupy only about as much disk space as the data itself, Kinikin said.

What is more, Sybase IQ reduces the I/O backlog associated with most large database queries because it only retrieves data that is relevant to a particular query, Kinikin said. And unlike traditional OLAP servers that store summaries of data and require users to return to the source database for detailed information, Sybase IQ generates the data directly from the index, she said.

According to customers and analysts, if Sybase can deliver IQ as planned in the fourth quarter, it will be a boon to the company that has recently faced a few rocky quarters.

Sybase IQ is expected to work with an assortment of databases through the company's Open Server API and family of gateways. The product, however, will only be sold as a SQL Server add-on and will cost about as much as the database itself, Sybase officials said.

Analysts applaud the performance and flexibility. "From a technology standpoint, Sybase IQ seems to be a generation ahead of the traditional query engines," said Brian Murphy, an analyst at The Yankee Group, a Boston consultancy. "As long as Sybase is able to deliver it, and it's stable and relatively easy to use, people will find it an attractive option because you're not locked into [Sybase] SQL Server," Murphy said.

A beta tester of Sybase IQ said the software is "appallingly fast," and that Sybase is being conservative in its estimates of how the product will boost data warehousing applications.

Steve Zielenski, manager of business information reporting at MCI Communications Corp. in Arlington, Va., is testing Sybase IQ with about 20 million rows of telecommunications traffic information that is updated weekly. Zielenski said it takes about 40 minutes to generate the indexes and summaries, and that queries on the data take about 40 seconds.

"An added benefit is that we're saving disk space," Zielenski said. Whereas indexes typically occupy up to twice as much space as the raw data, Sybase IQ indexes take only about 65% of the space, he said.

©Sybase: (510) 922-3500.

HOW SMART IS SYBASE IQ?

Pros

- Reduces I/O by accessing only data relevant to the query.
- Speeds up certain queries by as much as 100%.
- Occupies less disk space than traditional on-line analytical processing software.

Cons

- Only sold as an add-on to SQL Server database.
- Will cost about as much per server as the database software.

New middleware quickly forges workgroup links

By John Cox

Palo Alto, Calif.

A new middleware product lets popular desktop and workgroup applications share information instantly, regardless of their underlying network and operating system platforms.

Rendezvous Software Bus, recently announced by Teknekron Software Systems, Inc., is a communications software layer that translates information from different applications into a common format. This way, the information can be read by any other application that plugs into the bus. An optional software router lets the bus work over wide-area network links.

The benefit is that programmers and, in some cases, even end users, can set up information sharing among applications without having to know details of protocols, data formats and addresses, said Bradley Rode, vice president of core technology at the company, based here. Rendezvous Software Bus also eliminates the need to create and maintain specialized point-to-point interfaces be-tween applications.

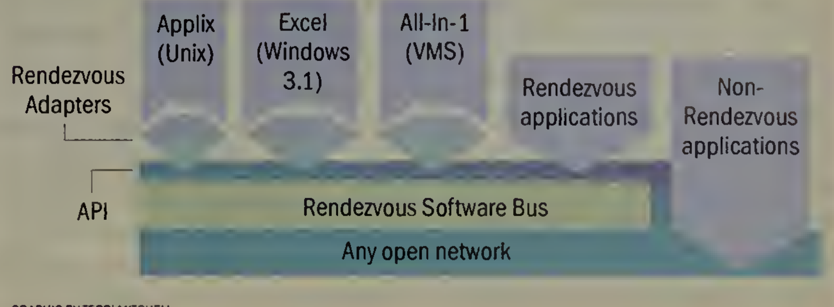
"My first impression was that someone finally came up with shrink-wrapped software that people could buy," said Jeffrey Cavallaro, who runs Cavcom, Inc., a Lawndale, Calif., consulting company. Programmers have had to write this kind of software laboriously by hand for years,

See **Middleware,** *page 26*

A MEETING ON THE BUS

Plug-in modules and API link desktop applications

Ready-to-use adapters or the API lets applications plug into the communications layer. Then applications list, or publish, the kind of information they have. Others sign up, or subscribe, to receive it automatically. The bus handles communications protocols and connections, even over WAN links.



GRAPHIC BY TERRI MITCHELL

Notes:Newsstand brings magazines to the desktop

By Annmarie Timmins

Cambridge, Mass.

Lotus Development Corp. Notes users will have to spend less time searching for obscure but valuable magazine articles with the arrival of a new Lotus service that electronically deposits Notes-formatted business articles on their desktops.

Lotus Notes:Newsstand, recently announced, is a set of publishing tools for electronically distributing industry magazines over the Lotus Notes network. Once a Notes user subscribes to a publication, it is put on their corporate server regularly through replication.

So far, Lotus has signed on about 50 publications. Few are well known (*Defense Daily, High-Tech Materials Alert, Compensation & Benefits Review*), but one user, Kris Jensen, an associate with the Sacramento, Calif.-based consultancy Delta System Associates, said the selection has improved in recent months of beta testing.

Jensen said he is reading more job-related magazines with Newsstand than he used to. "We don't have time to flip through all the various publications to find information," Jensen said.

But users are not completely satisfied. Some have asked for agents that would search publications and retrieve only specified articles, making Newsstand

See **Newsstand,** *page 26*

Newsstand

Continued from page 25

more efficient, said Jim Dougherty, director of the Advanced Technologies Group at Lotus. Lotus is evaluating the request, he said.

Free magazines — for now

Jensen now susbscribes to all the magazines Newsstand offers because Lotus has not been charging him during the pilot phase of the project. He will rethink his selection when he starts getting a bill, he said. Newsstand gives him an index of all the articles in each publication, and he can read any of them online. Jensen said he likes being able to easily incorporate the articles in the Notes documents that he shares with coworkers and clients.

Although Lotus intends to add other publications to its list, Jeff Tarter, editor and publisher of the Watertown, Mass.-based "Soft Letter" newsletter, said the challenges of electronic publishing will slow them down.

"Electronic publishing is always more difficult than anybody ever thinks it's going to be," Tarter said. "There are lots of variables: fonts, how to bill customers for usage, how to search for content, creating and displaying graphics..."

WHAT'S ON THE NEWSSTAND

Lotus has signed on more than 50 publications for its Newsstand service. Here's a small sample:

- *Best's Review*
- *Financial World*
- *Multimedia Week*
- *The Daily Brief*

But even if Lotus does add new names to its list, Tarter warned against looking for popular, well-read publications. He said it doesn't make sense for mass-market magazines to use Newsstand because they already enjoy a large audience.

The value of Newsstand, Tarter said, is the direct connection it provides to the hard-to-find audiences of these obscure magazines.

"The smaller the publication and the more narrow the focus, the more difficult it is to connect the reader and the publisher," he said.

Lotus will charge Newsstand users $15.95 an hour for replication, but it requires they first enroll in the Lotus Notes Network. Subscription fees are additional, and those are set by the magazine's publisher.

©Lotus: (800) 357-0051.

COMMENTS?

See "How to reach us" on the Opinions pages.

Vendors gear up for GroupWare '95 conference

By Barb Cole and Annmarie Timmins

San Jose, Calif.

New software that combines workflow and groupware capabilities is among the offerings expected to be rolled out at the GroupWare '95 conference here this week.

TeamWare, a joint venture between ICL, Inc. and Fujitsu Open Systems Solutions will announce TeamWare Flow, a collaborative workflow system. With TeamWare Flow, workers can see the workflow diagrammed on their personal computers. Users with access rights can even modify a workflow diagram without programmer intervention.

The software includes a Windows-based Viewer, a Form Builder tool and a Graphical Planner. It works with Sybase, Inc.'s SQL Server and any database that supports Microsoft Corp.'s Open Database Connectivity. Available in the fourth quarter, TeamWare Flow is priced at $495 per user.

Also at the conference, Ventana Corp. of Tucson, Ariz., will show off the next release of its groupware product, GroupSystems, which is due in the fourth quarter.

The release will include add-on packages for automating routine office tasks like gathering data for surveys and reengineering business procedures.

Pricing for the Windows version of GroupSystems starts a $895 per user with a 10-user minimum. ■

Middleware

Continued from page 25

according to Cavallaro.

Cavallaro started using Rendezvous Software Bus as a stopgap to let a cellular carrier's switches and server-based applications share data. "But as we started to work with it, I felt [Teknekron] had done a very good job. I'm optimistic about how we'll use it as our communications backbone," he said.

Rendezvous Software Bus comprises a set of API libraries and Rendezvous Daemon, which is a small communications program that runs on each computer and handles the low-level network connections. Rendezvous Software Bus is based on technology developed for the company's high-end middleware product, Teknekron Information Bus.

Corporate developers can build new applications themselves using the API provided. But Teknekron is also creating a set of "adapters" that package the API with Dynamic Data Exchange (DDE) or OLE for specific applications, such as Microsoft Corp. Excel.

From within a Rendezvous Software Bus application, users designate what information they want to make available (called publishing), such as some spreadsheet cells, and the bus registers this designation. The spreadsheet uses OLE, DDE or other standard interfaces to pass changes to the Rendezvous Software Bus API, which eliminates the need to know server locations, addresses and other information. Rendezvous Daemon takes over to handle the low-level network connections and ships the cell changes to all other applications that have registered interest.

Rendezvous Software Bus supports Windows, Windows NT, Unix and VMS platforms, with prices ranging from $350 to $3,000, depending on the platform. The software is available now.

©Teknekron: (800) 842-4636.

BusinessBriefs

Tivoli Systems, Inc. of Austin, Texas, has sold $3.5 million of systems management software to **Medaphis Corp.**, which will use the Tivoli Management Environment (TME) systems management software to control its nationwide network of client/server applications running on more than 5,000 computers. Medaphis, an Atlanta-based provider of medical information services, has an Atlanta information technology center, as well as 10 regional processing centers. Using TME, IT employees in Atlanta will be able to manage the entire net.

Foster City, Calif.-based **Blyth Holdings, Inc.** last week reported that revenue for its first fiscal quarter, ended June 30, was down about 16% from the same period last year. The company, which sells the Omnis7 cross-platform application development tool, recently reorganized and implemented a cost-cutting plan that included reducing its workforce by 43 employees, about 25% of its staff.

SHARED LOGIC

Start thinking groupware

IBM's acquisition of Lotus Development Corp. has brought Lotus Notes squarely into the spotlight. IBM's bid to dominate the client/server market hinges largely on the quality and scalability of Notes, so I spoke with Tim Dempsey, director of Notes product marketing, to get some insight into where Notes is going.

Mark Myers

While the release of Windows 95 is getting all the attention these days, Version 4.0 of Notes — expected to be released by IBM's Lotus subsidiary in the fourth quarter — also will be a momentous launch. Simply put, Notes 4.0 will be the cornerstone of the IBM/Lotus product strategy.

What complicates the IBM/Lotus message is the industry's lack of familiarity with groupware. With more than 1.5 million users, Notes is a hit. But these numbers hide the fact that most users and developers still do not *think* groupware.

What I mean is that Notes provides a new model for automated problem solving. But most developers don't think of solutions to business problems in terms of document-oriented distributed databases, replication, E-mail and streamlined remote access. To spur the growth of third-party Notes applications, IBM will need to get developers to adopt a new approach to business problem solving.

The groupware solution is much more intuitive than the traditional approach, once you get accustomed to it. So many business applications are naturally document-based and could be easily automated via Notes. Notes' team communication devices and its singular ability to keep remote users easily synchronized make it ideal for many classes of business systems.

But IBM is going to need more than just good marketing and public relations to change the industry's thinking. It has to have great product advances from Lotus that win buy-in from the application development community. To this end, Version 4.0 addresses key issues.

Primary among them is the release of the Lotus Script development environment, which will move developers beyond the constraints of the current C language API and Macro-based programming.

If Lotus Script is as usable and powerful as promised, it should promote a surge in Notes-based applications. What is most promising about Lotus Script is the fact that it generates applications for any Lotus platform with no source code changes.

Also of great significance will be how well Notes can scale up as an enterprise solution. In order to be regarded as an enterprise groupware standard, Notes must be integrated with existing network management tools.

To this end, Lotus has already released Simple Network Management Protocol agents for OpenView that allow event messages to be sent from a Notes server to any SNMP management workstation. Dempsey said that IBM is also planning to integrate with SunSoft and IBM network management platforms in the near future.

On the configuration management side, IBM/Lotus certainly has an advantage with the sophisticated replication facilities offered by Notes. Notes replication can be used to automatically push application updates out to all network clients.

When asked for his thoughts about the IBM acquisition, Dempsey said "It's a great idea. Competing with Microsoft has just taken on a completely new flavor. And I think it's going to be great for the communications business."

Indeed, the ultimate target here is Microsoft. But Microsoft's reign will remain largely undiminished unless IBM can manage to get an entire industry, even an entire society, thinking groupware.

Myers is president of Client/Server Connection, Ltd., a Cambridge, Mass., firm specializing in client/server software solutions. He can be reached at (800) 622-1108, Ext. 522, or via CompuServe at 71332,1726. Myers' column alternates in this space with that of META Group, Inc.'s Mike Rothman.

Electronic Commerce

Covering: Tools and Techniques for Interenterprise Networking
and Doing Business On-Line

Briefs

■ **SunSoft, Inc.,** *a Chelmsford, Mass., subsidiary of Sun Microsystems, Inc., will introduce at the TCP/IP Expo in San Jose, Calif., this week SolarNet WebScout, a* **PC-based Internet access package** *that includes Netscape Communications Corp.'s Netscape browser, a news reader, electronic mail functions that support Multi-purpose Internet Mail Extensions and Microsoft Corp.'s Messaging Application Programming Interface, telnet and File Transfer Protocol. The $150 product supports Microsoft Windows 95 applications and runs on TCP/IP LANs or from remote dial-up systems.*

SunSoft: (800) 786-7638.

■ *The House of Representatives has passed the* **Internet Freedom and Family Empowerment Act,** *a bill ensuring that on-line service providers that block pornographic or offensive material from users will not be considered liable for content as publishers. It also bars the Federal Communications Commission from regulating content on the Internet or other interactive services. The legislation, introduced by Reps. Chris Cox (R-Calif.) and Ron Wyden (D-Ore.), was added to the House telecommunications reform bill.*

Cox

Reconvening this fall, Congress must decide whether the final version of its telecommunications reform legislation will include the Cox-Wyden approach or the Senate's Internet legislation, Sen. James Exon's (D-Neb.) Communications Decency Act.

■ **StarBurst Communications Corp.** *has released StarBurst Multicast,* **file transfer software** *that lets users deliver information to a large number of sites simultaneously.*

StarBurst Communications: (508) 287-5560.

Policy links 'Net domain names to trademarks

By Ellen Messmer

Herndon, Va.

Companies that use — or plan to use — Internet domain names on everything from World-Wide Web sites to business cards better take heed of a new policy that ties the use of domain names to trademarks.

Network Solutions, Inc., which runs the Internet Network Information Center (InterNIC) Internet registration service under an agreement with the U.S. government, has decided it will side with trademark holders in disputes over which company has the right to use a particular domain name.

The move is designed to protect users that want to extend their corporate identities into the Internet and prevent individuals or companies from grabbing up domain names for popular brands or companies (*NW*, Aug. 7, page 18).

The company also intends to apply its new rules retroactively, which means trademark holders could challenge domain names already in use. Network Solutions could even suspend a name until a court settles the dispute.

Domain names usually contain a short form of the company name or its initials. *Network World's* domain name, for example, is nww.

If a dispute arises over a domain name, Network Solutions will recognize the claims of a party holding a registered U.S. trademark or any foreign trademark certified by the U.S. Patent and Trade Office, according to Grant Clark, Network Solutions' attorney.

The disputed domain name may end up suspended until a court or the American Arbitration Association decides the merits of the claims.

InterNIC drafted the policy after becoming the target of a trademark lawsuit from Palantine, Ill.-based consultancy KnowledgeNet, Inc. earlier this year. InterNIC had granted the domain name knowledgenet to another Internet user also named in the suit. KnowledgeNet eventually dropped its complaint against InterNIC.

The policy also requires domain name applicants to have two servers up and running on the Internet before InterNIC will issue a domain name, which means companies cannot reserve names in advance. Clark said that will keep people from warehousing domain names.

Network Solutions' policy states that anyone registering a domain name with InterNIC must pay for legal costs Network Solutions incurs if it is drawn into trademark lawsuits.

"InterNIC is really in a tough situation," said Karl Auerbach, a trademark attorney. But he noted that linking domain names to trademarks may lead to more disputes.

"Take the names Finesse and Flex," he said. "These are domain names, but they're not owned by the shampoo makers."

Grant, acknowledging that the InterNIC is exploring uncharted terrain, said that the new policy was approved by the National Science Foundation, the head of the Internet Address and Numbering Administration, the Internet Society and the International Trademark Association.

But critics questioned why the public was not asked to comment. "I object that it was created without the usual openness," said Phil Trubey, president of San Diego-based NetPartners, Inc.■

The name game

The new InterNIC domain name policy requires applicants to:

- Prove that they have the right to the domain name
- State an intent to use the domain name on the Internet regularly
- Ensure the name doesn't infringe on third-party trademarks, company names or intellectual property rights
- Refrain from using the domain name in a misleading or confusing manner
- Have at least two operational Internet servers for that domain name fully connected to the Internet upon applying for the name

SOURCE: NETWORK SOLUTIONS, HERNDON, VA.

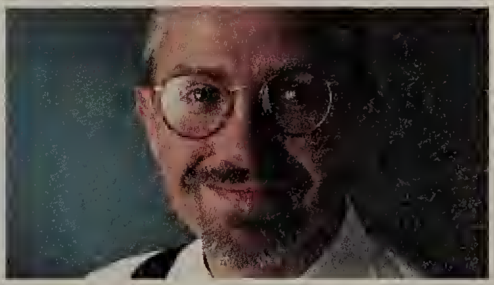
GRAPHIC BY TERRI MITCHELL

BUSINESS SPACE

'Is it too much to ask?'

Last week, I was discussing Web browsers and I got on a roll. (Hey, when you're hot, you're hot.) So this week, I'm continuing with that train of thought.

What really bugs me is the lack of understanding of IS needs shown by the various browser vendors. (After my recent nice comments about Netscape Communications Corp., I'm including them in the rank and file of sinners.)


Mark Gibbs

Before we get into the problems with browsers, let's consider the needs of IS. Poor, abused slaves that they are, IS professionals have a heavy burden on their shoulders.

If you are a user, skip this paragraph. IS has to lead ignorant and unwilling users into the path of righteousness. IS has to build systems that even a demented laboratory pigeon could master given enough training in a Skinner box.

If you are an MIS type, skip this paragraph. But IS has to realize that it's there to make users' lives simpler and more productive. IS has to get down off its inflated ego and build real-world systems that work.

Everyone start reading again. So when it comes to Web browsers, what's the IS problem?

Well, the problem is users reconfiguring their Web browsers, which is ridiculous if you are creating an internal MIS system based on a private Web. Having control of application configuration is essential to maintaining the sanity of the support desk.

In many browsers, if users decide to adopt the Blackmail font in 96 points for the default proportional font, there's nothing to stop them.

Some browsers even go so far as to allow the detailed rendition of every tag. Not only is this a complete waste of time, but for 99.9% of browsing, it is of no use at all.

Can't you just hear it? "Hi, Support here. You can't see text on your browser? What page are you on? . . . I see."

Several dozen questions and 60 minutes later: "And what's the color of the background . . . black? You changed it 'cause you thought it looked neat? I see . . . well, we'll just have to send Guido 'round to reconfigure your PC back to how we set it up. Have a nice day." (Sound of phone being slammed down.)

The solution is simple. We need to be able to lock down the browser's configuration so that it can't be changed by a rampant user.

And don't suggest that I could just put the configuration file on a server and make it read-only; the browser might be on a stand-alone PC. And even if there is a server on which I could hide my configuration file, I don't want users to even see that changing the options is possible.

Browser vendors should make it possible to set a configuration variable so that it says, in effect, "Don't display a menu option to allow configuration changes."

Browser vendors, it is vital that you address this issue so that:

If you are an MIS type, skip this paragraph. MIS can continue to enjoy its soft life playing with technology, and users can get on with the real work.

If you are a user, skip this paragraph. Users won't drive MIS to the bottle.

Everyone start reading again. Is a little IS consideration too much to ask?

Gibbs is a writer and consultant based in Ventura, Calif. He is on holiday but still reads his E-mail. Is this an addiction? Suggest a cure by dropping a line to mgibbs@gibbs.com or leave voice mail on (800) 622-1108, Ext. 504.

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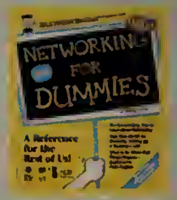

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Technology Update

Keeping Up with Network Technologies and Standards

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We're considering replacing our Novell, Inc. NetWare 3.X LANs with Banyan Systems, Inc.'s VINES. Do we have any other options?
D.M., Randolph Air Force Base, Texas

Replacing NetWare with VINES is an expensive proposition, says Kirk Spessard, a network analyst at Paranet Corp., a network services provider in Houston. You have to consider the costs of purchasing VINES, converting your third-party products to run under VINES, as well as the cost of training, moving data and implementation time. In addition, no third-party product currently exists to easily convert NetWare users to VINES or VINES users to NetWare.

As an alternative, you might want to consider Banyan's Enterprise Network Services (ENS) for NetWare, which enables NetWare users to employ Banyan's StreetTalk global directory services. ENS enables NetWare users to reach VINES and other NetWare users and resources, as well as use Banyan's Intelligent Messaging for electronic mail.

Point your Web browser at http://www.nwv.com/helpban.html for a fuller discussion of this issue.

What is SCRAMNet?
Matt McDonald, Huntsville, Ala.

It stands for Shared Common RAM Network and enables dissimilar computers and architectures to share a common pool of RAM, which enables them to perform reads and writes as if they were using local memory. The size of this memory pool ranges from 128K bytes to 8M bytes, says Howard Bleiwas, a staff consultant for EJR Computer Associates, Inc., a consulting firm in Hoboken, N.J.

Developed by Systran Corp., SCRAMNet is optimized for high-speed, low-latency transfer of data among various platforms that are all solving portions of the same problem in real time.

For more information about SCRAMNet, contact Systran at (800) 252-5601 or via the Internet at info@systran.com.

New ATM Forum spec cures migration ills

By Andrew Greenfield and Shirish Sathe

The ATM Forum is working on a solution, called Asynchronous Transfer Mode inverse multiplexing (AIM), for the age-old problem network managers face when they need more bandwidth than allowed from reasonably priced T-1 links but do not have enough traffic to warrant the use of costly T-3 pipes.

A technology like AIM is critical for allowing network managers to cost-effectively deploy multiservice, broadband ATM wide-area networks. It alleviates the need for them to take the dramatic jump to T-3, which at 45M bit/sec, provides 28 times the bandwidth of a 1.544M bit/sec T-1 link but can involve up to a tenfold increase in circuit costs.

The idea behind AIM is to provide a high-speed connection between two locations using multiple point-to-point T-1 links and manage them as a bundle. Outfitted with an AIM interface, ATM routers, campus switches and other customer premises equipment can access high-speed ATM services using a number of lower speed links.

With AIM, ATM devices can be connected with as little as a single T-1 ATM link. As networking requirements grow, bandwidth can be added in T-1 increments until traffic volumes justify the use of T-3 links.

Sounds familiar

This concept of inverse multiplexing is not new, but traditional methods focus on the bit, not the cell, level.

Bit multiplexing has been geared for T-1 and assumes certain framing characteristics that are based on the International Telecommunication Union standards for DS1 datastreams.

Bit multiplexing works at the physical layer and typically calls for one of the 24 time slots in each T-1 to be used for synchronization, leaving a datastream of 1.474M bit/sec. This technique is protocol-independent: Traditional inverse multiplexers take a generic bitstream, split it across multiple lines and reconstruct the stream at the other end.

On the surface, bit multiplexing sounds attractive because it is a generic technology able to support different traffic types. However, all current implementations are proprietary and not readily extendable to a range of higher speeds.

On the other hand, the impending ATM Forum standard is designed to facilitate interoperability of various network products from a number of vendors implementing an ATM inverse multiplexer service in either public or private networks. What's more, AIM can be used to combine multiple T-1, T-3 or even OC-3 ATM lines. (The AIM protocol is designed for T-1 applications but does not preclude other link speeds.) And because it operates at the cell level, it is fully compatible with ATM interface standards.

Across the links

The AIM interface sends parallel streams of cells across multiple T-1 lines, dynamically balancing the cells over all available links. The receiving device reconstructs the cellstream, placing the cells in their original sequence.

ATM cells transmitted across disparate links may experience different delays in reaching their destination. To ensure the cell order, it is necessary to detect and compensate for the relative path delay. The AIM control protocol, which uses less than 1% overhead, handles this function.

The control protocol is responsible for verifying the integrity of the AIM link, measuring the differential delay and increasing or reducing bandwidth by adding or deleting T-1 links from the logical connection. It is implemented as a sublayer within the transmission convergence layer.

Within a switch, the sublayer receives cells from the ATM layer and sends them out over multiple links. At the other end, the transmission convergence layer receives ATM cells, adjusts for difference in link delays and recreates the cell sequence, which is forwarded to the ATM layer.

In the outbound direction, the switch's transmission convergence layer receives the ATM cellstream in the User-Network Interface (UNI) or Network-Network Interface (NNI) format. Every CellTime, or 276 microsec for a T-1 circuit, a cell is served to a link of the AIM group in a round-robin manner. AIM is designed to support all standard UNI features and ATM traffic types. All standard ATM adaptation layers and signaling protocols operate over the AIM interface unmodified.

The benefits of AIM

Beyond the obvious benefit of providing fractional ATM links between T-1 and T-3 rates, AIM has many other tangible advantages, including:

- **Painless migration.** Users can implement ATM with a single T-1, adding bandwidth in small, more cost-effective increments.
- **Multimedia support.** Because AIM is cell-based, it can handle all ATM service classes and traffic types.
- **Reliability.** If one physical link fails, then the logical AIM connection dynamically slows in speed.
- **Simplicity and versatility.** Because it is based on cell switching, AIM can be easily implemented as an interface within any ATM device and can be used for any type of ATM interface, including UNI, NNI and Private NNI.

In the end, as companies' bandwidth requirements exceed T-1, they face an awkward predicament and a costly jump to broadband speeds. AIM offers a simple, smooth and cost-effective solution, providing ATM networking in affordable and bit-size chunks.

Using separate T-1s will be particularly attractive when a T-3 is either unavailable, just too expensive or unwarranted for the amount of traffic.

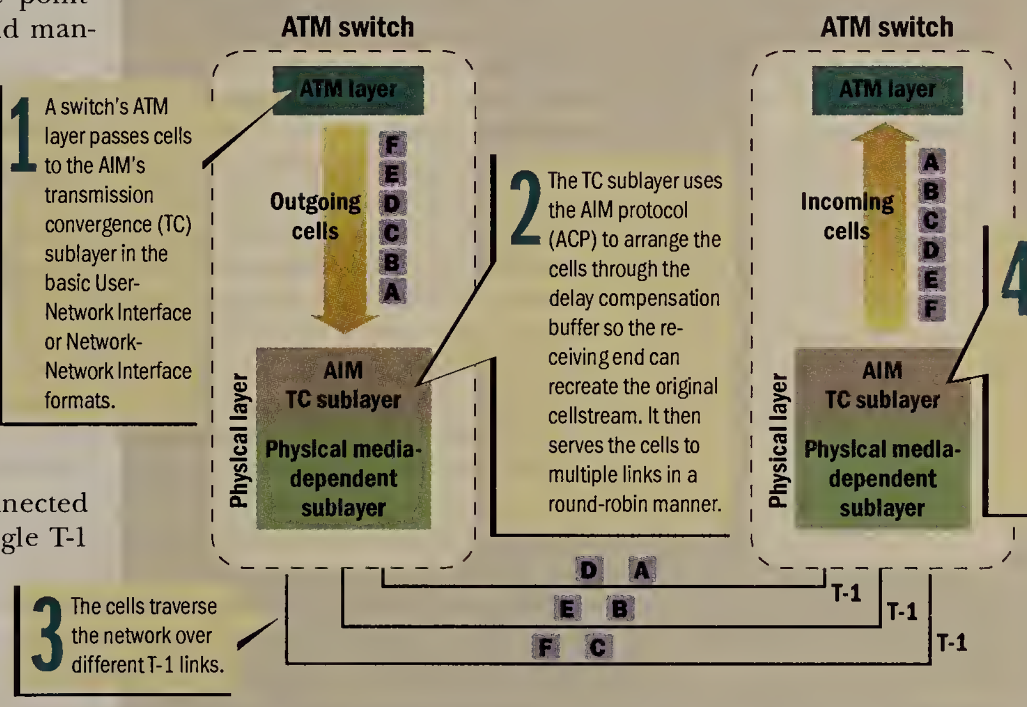
The ATM Forum is expected to approve the AIM standard in early 1996.

Greenfield is product-line manager for ATM services and Sathe is engineering group manager at StrataCom, Inc. in San Jose, Calif.

HOW IT WORKS

Inverse multiplexing cells

The ATM Forum's impending ATM inverse multiplexing (AIM) standard specifies a way to connect two locations using multiple point-to-point T-1 links that can be managed as a bundle.



1 A switch's ATM layer passes cells to the AIM's transmission convergence (TC) sublayer in the basic User-Network Interface or Network-Network Interface formats.

2 The TC sublayer uses the AIM protocol (ACP) to arrange the cells through the delay compensation buffer so the receiving end can recreate the original cellstream. It then serves the cells to multiple links in a round-robin manner.

3 The cells traverse the network over different T-1 links.

4 The TC sublayer receives the cells and adjusts for difference in link delays and recreates the original cell sequence. It then forwards the cellstream to the ATM layer.

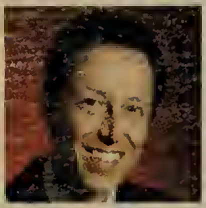
EDITORIAL INSIGHTS

Exchanging Notes

Away from the hoopla of the Windows 95 rollout, Microsoft's latest messaging technology, Exchange Server, has been quietly working its way toward completion. At a workshop in New York earlier this month, I got a look at the second beta version of the product.

Microsoft somewhat disingenuously disclaims any comparisons of Exchange Server to Lotus Notes, asserting this is a "battle" concocted by the press. But the truth is, both products can serve similar roles within an organization, as can Novell's revised groupware product, GroupWise XTD.

The key difference is that Exchange is a messaging-centric service that includes collaboration features, while Notes is a workgroup application that includes E-mail capabilities. That's not just a matter of semantics. Microsoft's approach seems more in line with the needs of most organizations, where E-mail is essential and groupware — today — is not.



That's not to say Exchange lacks group conferencing features. Its public folders offer the same kind of discussion groups as Notes.

Exchange also adds a client/server version of Schedule+, a group scheduling product, as well as built-in security and encryption and a rudimentary forms capability. It's programmatically extensible via Visual Basic and C++.

Perhaps Exchange's greatest benefit is that, using graphical tools well-integrated with Windows NT's GUI, it seems easy to manage. No one ever said that about Notes, although the jury is still out on Notes 4.0. Hidden management costs can mount up quickly when they require the addition of a new messaging administrator or take current staff away from other projects.

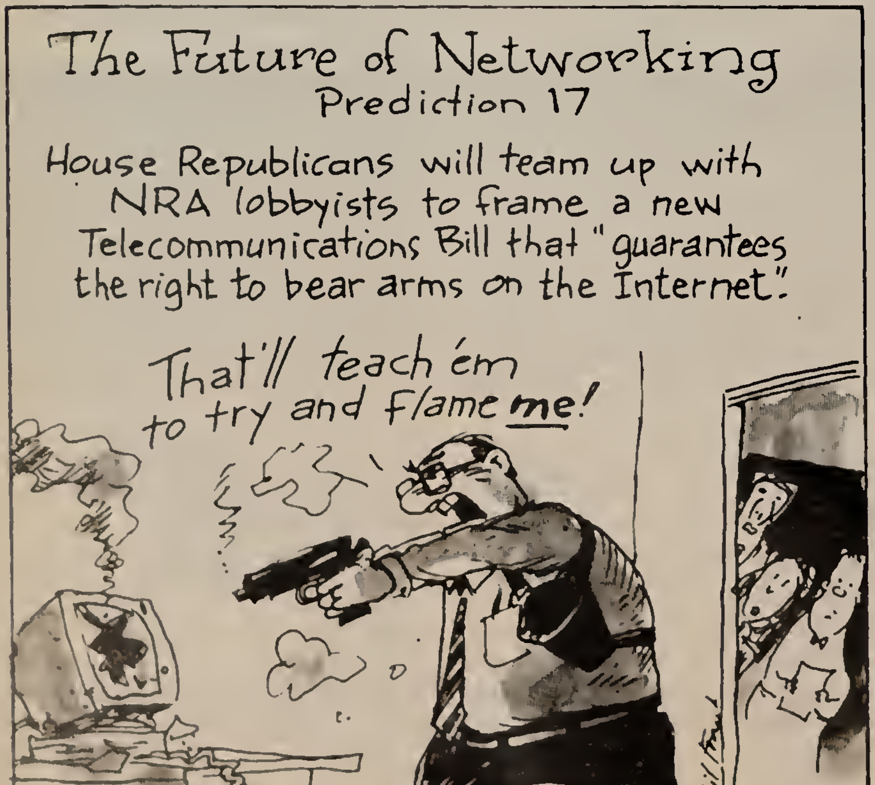
Still, Microsoft has its work cut out for it. Virtually every company has E-mail today, and none have Exchange Server, save for the handful of beta users. The company is beginning its uphill climb with a well-thought-out plan to allow organizations to flexibly migrate to Exchange, either by gradually replacing existing clients and leaving the current messaging backbone, or by implementing Exchange Server first for use with existing clients.

Lotus sites that put messaging first, and network managers who are frustrated with the heavy administration load of Notes, will soon have a worthy alternative from a stable company. Organizations that are still evaluating groupware should carefully consider what they want to accomplish with it. They may find that Exchange Server, on its own or in tandem with one of the many small-scale conferencing products, suits their needs.

Lee Schlesinger lschlesi@nww.com

Teletoons

By Phil Frank and Joe Troise
Internet: guru@well.com


The Future of Networking
Prediction 17
House Republicans will team up with NRA lobbyists to frame a new Telecommunications Bill that "guarantees the right to bear arms on the Internet".
That'll teach 'em to try and flame me!

CALL TO ACTION

Users: Speak up now or bureaucrats will decide what's best for you

Matthew O'Brien

Although the communications industry sometimes resembles an avalanche, it actually ebbs and flows in a somewhat regular cycle. The introduction of new products and services is followed by a period of user implementation. Improvements soon arrive and choices flourish until the market undergoes a shakeout and stabilizes around a few vendors and providers. Then a new technology emerges and the cycle begins again.

Periodically, the arm of government intercedes and upsets this natural order. This is happening now, as Congress and the Federal Communications Commission debate a series of rulings and bills that would fundamentally change the industry, affecting every business that depends on communications services. As such, it's vital that users speak out and become activists now or accept what carriers and bureaucrats decide is in their best interest.

Deregulation is a hot issue, as Congress attempts to rewrite the Communications Act of 1934. At present, the House and Senate each have their own version of reform and the two sides must hammer out a single compromise bill. As one might expect, lobbyists for the RBOCs, interexchange carriers and cable TV companies are swarming the Capitol, attempting to get favorable treatment for their respective side. What is not being heard inside the beltway is the voice of the user.

> *If your business depends on toll-free access, you face a huge problem and need to be involved in Washington immediately.*

According to the results of a survey of Communications Managers Association (CMA) members, 65% favor deregulation of the local exchange market. This would eliminate monopolies for local service and let the RBOCs, long-distance companies and cable TV companies offer a full range of services in any market.

However, 70% of the respondents believe the transition to a competitive environment should be phased in over an 18- to 24-month period, for fear a date-specific approach would launch a confusing free-for-all.

CMA members split evenly when asked if the government should limit the number of licenses for local access service. The majority of CMA members favor retaining the FCC as the governing body rather than the Department of Justice, but want the department to remain an antitrust watchdog.

It is clear that users have strong (but not always unanimous) opinions about what type of marketplace they want to see. But if users don't speak up, they will have to take what they are given.

The 800-number shortage is another hot issue for users. A fourfold increase in 800-number requests in June threatened to wipe out the supply of 800 numbers this month. Add in the fact that the new 888 toll-free prefix cannot be brought on-line until April 1996 at the earliest and you have our industry's version of the oil crisis of the 1970s.

To prevent a catastrophe, the FCC ordered rationing of 800 numbers and will launch a series of hearings into the 800/888 situation. The problem is users are not being consulted on many issues and are not speaking out on those issues they have been invited to address. If your business depends on toll-free access, you face a huge problem and need to be involved in Washington immediately.

In order to maintain an adequate supply of 800 numbers until 888 comes on-line, the carriers have been ordered to limit the quantity of numbers they give out. This means your next 800 order may not be fulfilled.

The FCC's Common Carrier Bureau also plans to shorten the time a number can be reserved from 60 to 45 days and has contingency plans to eliminate number reservations completely if the supply gets too low. This means you could lose 800 numbers you are trying to keep.

In addition, the time allotted for previously used 800 numbers to "cool off" before being recycled will be radically reduced from one year to four months. This will result in a higher number of misdials as you implement numbers that are still warm from their previous owners.

A big question is how 888 will be phased in. Users want to be able to replicate their 800-number assignments in the new 888 exchange, but the carriers are fighting it vigorously. If the carriers get their way, a competitor could seize a look-alike number — say, 1-888-FLOWERS, a near double for the well-known 1-800-FLOWERS — and misdirected calls would cause the competitors' business to skyrocket.

The Common Carrier Bureau recognizes that user input is needed and that carriers have not done a good job of soliciting users' views. However, at meetings that are presently open to users, few, if any, are attending. If you rely on 800 numbers, you need to attend these meetings and make your views heard. More information about this can be found on the CMA World-Wide Web home page (http://www.cma.org).

Another issue users should be concerned about is ISDN charges. Under current law, local exchange carriers are required to price ISDN subscriber line charges on a per-channel basis. This means Basic Rate Interface users pay two charges and Primary Rate Interface users pay 24 charges. The FCC has proposed that charges be made on a per-facility basis and safeguards be implemented to prevent the carriers from raising other access charges, which could increase interstate toll rates.

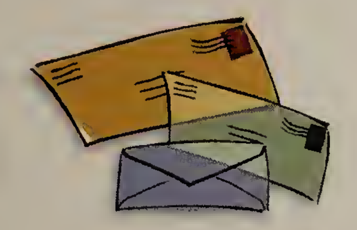
The CMA has filed an official response with the FCC applauding this effort and urges all users to do the same.

Although the formal comment period has ended, users should still send their comments to the FCC at 1919 M St. NW, Washington, D.C. 20554 – Docket No. 95-72.

These issues represent the tip of the iceberg as the communications industry becomes globally competitive. It is clear that users must stick up for themselves because no one else will.

Now is the time to be an activist. Your job and your company's future depend on it. It's feast or famine, and our friends in Washington are setting the table. Be sure you have a seat.

O'Brien is president of the CMA, headquartered in Morristown, N.J. He can be reached at (201) 425-1700 or via the Internet at gptg57a@prodigy.com.



IN-BOX

Backward reasoning

I take exception to some of the points Marc Schulman makes in his column "OLE, OpenDoc vie to shape the future of computing" (June 26, page 37).

First, OpenDoc is not IBM's technology. Component Integration Labs, which has been funded by Apple, Novell and IBM (among others), has built the OpenDoc technology using components from various companies, including IBM.

Second, Schulman advocates a return to a homogeneous operating system and hardware environment. As I recall, this is exactly what the PC movement rejected when it first got started. Heterogeneous systems are to be encouraged since they promote rapid technological innovation and guarantee options to purchasers.

Third, while I admit that Microsoft and Intel hold dominant positions in the desktop marketplace, Schulman seems to have forgotten that there are many other types of computer users. If we put all the MVS, OS/400, VMS, Macintosh, Unix and Unisys users on one side and all the Windows and Intel users on the other, the dominance would not be so clear at all.

Fourth, Schulman suggests that adopting the Microsoft and Intel world view will lead to systems that scale to the needs of mainframe computing. There is nothing that currently suggests that this is in any way accurate or that Microsoft and Intel have the resources to even contemplate the needs of large-scale computing.

Fifth, OLE currently is very much a Windows/C++ environment. As such, it provides little or no interoperability. OpenDoc, on the other hand, has been built to promote interoperability without sacrificing the benefits that users receive from operating in their native environment.

Finally, Microsoft's common object model currently does not support distributed object technology. While this has been promised with the much-delayed version of Cairo, the functionality is available today from IBM's CORBA-compliant DSOM, not to mention other variants from HP, Sun and others. Why bother waiting?

In short, I think Schulman has it all backward. The direction of the future is to support interoperability among a wide variety of operating systems and hardware through common media formats such as OpenDoc. Any other approach will inevitably lead to vendor lock-in, which is what we have been trying to get away from these last 15 years.

Jerry Golick
Independent network consultant
Montreal

Schulman responds: Mr. Golick's recitation of OLE's technical shortcomings is accurate, as is his assertion that, should OLE become the dominant object technology, the results will be a homogeneous (that is, Microsoft) computing environment and vendor lock-in. However, he seems to have missed the central point of my column. It wasn't my intent to advocate either OLE or OpenDoc. Instead, my purpose was to persuade users that they should consider more than technological merits in reaching their decision regarding which object technology to deploy.

Vision quest

In his "In-box" comments (June 26, page 37), telecommunications manager Tom Brophy writes, "What sets Gates apart is his vision."

Vision? Come on. There isn't a single piece of software from Microsoft that could be called original or visionary. Whether the subject is spreadsheets, graphical interfaces or network operating systems, Microsoft has been late to the party. Where Gates and company have excelled is at producing an adequate (in some cases, excellent) product and marketing it to within an inch of its life. It's that talent that has made Microsoft successful, not any supposed vision.

Arlen Walker
Senior programmer
Johnson Controls, Inc.
Milwaukee

Offer some solutions

Your article "NorTel wireless phone system links campus users" (July 3, page 6) contained the subhead "The harsh truth," referring to people's reactions to getting voice mail while trying to reach someone. It would be nice if you would include a few brief suggestions as to how readers can make it a less frustrating experience for themselves. For example:

- ■ Realize getting someone's voice mail is a probable outcome, given today's expectations of more work from less people.
- ■ Be prepared with a thorough, useful message if you do not reach the individual you are trying to contact.
- ■ Take a moment to think about how helpful your answering machine at home is.
- ■ Be a leader; if you have voice mail yourself, try to make sure you return calls promptly. If people get quick return calls, they will not have as negative a feeling when initially leaving the message.

Corporate executives, who have administrative assistants usually intercepting their calls, can be easily swayed against voice mail by articles such as this if they do not also see a fairly straightforward solution provided concurrently. Those of us trying to implement voice mail systems and educate our users could really use a supporting hand rather than negative press.

Leigh McBain
Manager, telecommunications systems
Core-Mark International, Inc.
Seattle

Don't forget us

Regarding your article "AT&T links its PBX to Ethernets over TCP/IP" (July 3, page 8), please note that Tadiran Telecommunications' Coral ISBX offers this type of connection as well as a first-party interface. Coral ISBX is Tadiran's flagship voice/data multimedia switching platform with a capacity range from 40 to 4,000 ports.

John Dabnor
Vice president, marketing and planning
Tadiran
Clearwater, Fla.

Access exists

Your article "Microsoft widens its E-com platform" (July 3, page 25) states that neither America Online nor CompuServe offers inbound access via the Internet. In fact, both of them do. I have demonstrated this capability to numerous students in the seminars I teach about on-line services and the Internet. For many people in outlying areas or overseas, where there are only low-speed access nodes or there is no local access directly to these networks, the Internet frequently offers a viable alternative. Furthermore, the current version of each company's interface software provides direct support for their full graphical user interface via an Internet connection.

Scott Helmers
President
Helmers Associates
Andover, Mass.

Editor's response: Representatives from America Online Services, Inc. (AOL) and Prodigy Services Corp. state that users dialing in from the Internet cannot get full access to their AOL or Prodigy on-line services at present. CompuServe, Inc. says FTP and telnet access to its on-line service is possible over the Internet, but an integrated browser giving its users full access to the Internet will not be available until year-end.

See **In-box**, *page 38*

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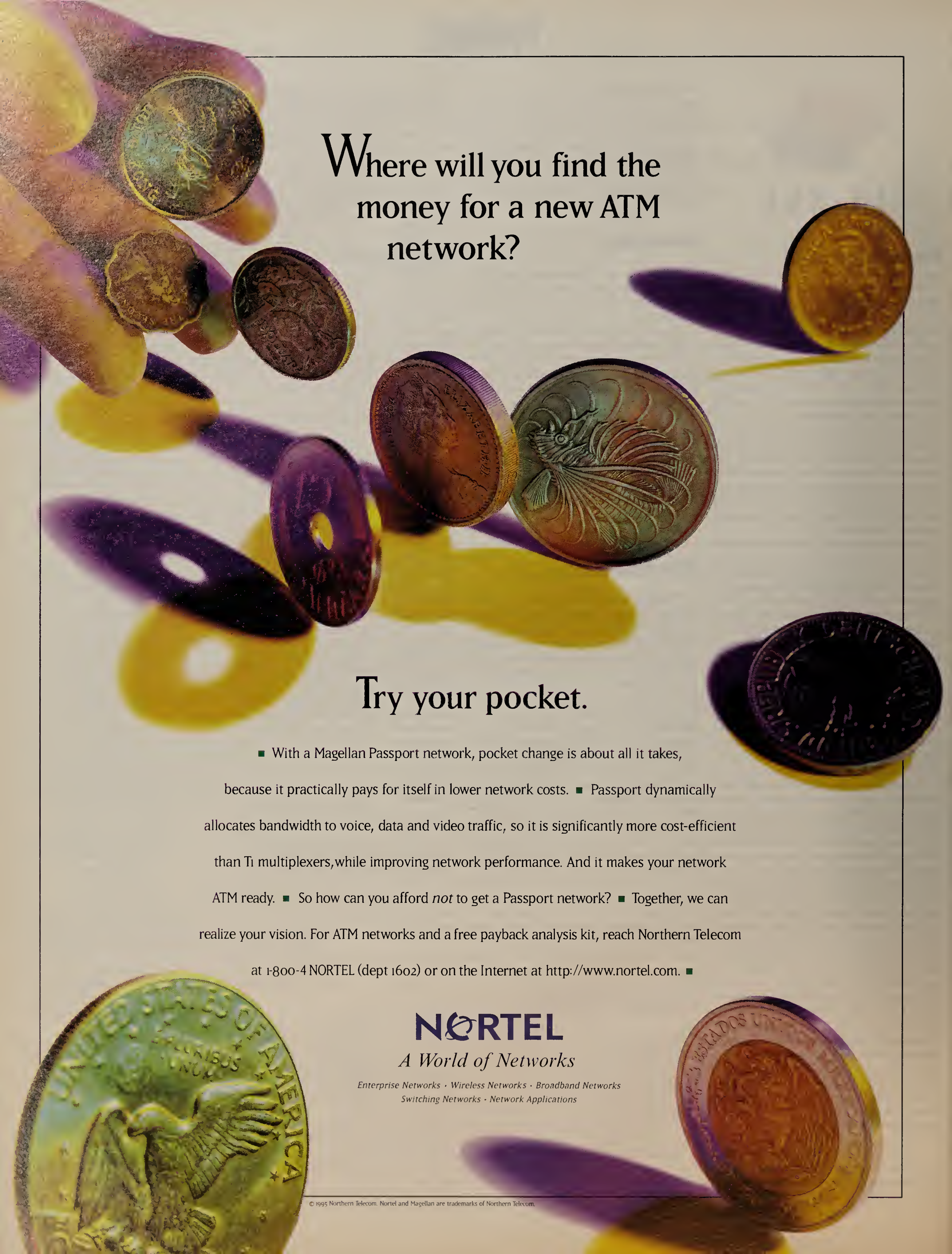

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ATM
CARRIER
INFRASTRUCTURES
Part Two

Managing TRAFFIC flow

From congestion management and flow control to policing, there's lots you need to know about what keeps your carrier's ATM net humming.

By Beth Gage

Picture this. You're flying into Chicago's O'Hare airport late at night. There's a thunderstorm raging outside, complete with driving rain, intense lightning and gusty winds.

Fairly scary, right? Now picture the same scenario without the benefit of air traffic controllers to guide the way. Now we're talking the stuff of Stephen King novels.

Well, it would be just as risky to buy an Asynchronous Transfer Mode service without a tried-and-true traffic management approach. To avoid risk to your data, you need to evaluate different carrier networks to determine which is on the most solid ground.

You should understand how your carrier's platform proactively manages traffic flow and network congestion. What happens if a switch becomes congested? When are your cells likely to be dropped? If excess capacity is available, how is it allocated across different customers and different service classes? Can you be confident that this allocation will not cause congestion?

How your ATM service provider answers these questions depends on the capabilities of its network platform. Traffic management is a broad subject comprising subtopics such as flow control, congestion management and routing, to name a few. If ATM is in your future, you will soon become very familiar with this traffic management lingo.

Turn it up, turn it down

You cannot have a discussion about traffic management without talking about flow control. Flow control determines how traffic is sent into the network and directly affects the level of network congestion. Effective flow control is the key to effective traffic management, especially in a public ATM service.

There are two types of flow control: explicit and implicit.

Explicit flow control employs closed-loop feedback systems that continually let each network switch know the level of congestion of other switches, ideally on a per-virtual-circuit basis. Control messages are sent between network elements — for example, between switches or out to customer premises equipment (CPE) — indicating the level of congestion at each node.

To be effective, feedback must extend all the way down to the traffic source, although there is still much standards and implementation work to be done on that front.

Explicit flow control is needed in the core network for the support of available bit rate (ABR) services. An ABR connection is allowed to ramp up its rate according to available network resources between minimum and peak cell rates. This requires feedback on the available resources so that the transmission rate of a virtual connection can be increased or decreased.

ABR service should provide feedback down to each ATM source, whether an ATM workstation or a premises ATM switch. Most CPE does not yet support this type of flow control or ongoing communication with the network platform. Today, the traffic source sends information to the public ATM network at the full port connection speed, instead of reacting to the changing level of available resources within the network.

Less attractive is implicit control, which does not send messages between transmitting stations. Instead, protocols such as TCP/IP are relied on to control the traffic flow in the network. The higher layer protocols increase or restrict the traffic flow based on the time it takes to receive a packet acknowledgment from the far end. Traffic can still back up but does so at the CPE instead of in the public network.

If no flow control is used by either the network or the upper layer protocols, then traffic is sent at a fixed rate into the network, regardless of congestion.

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Give me some feedback

Figure 1

Feedback schemes used by each platform and CPE with which it can dynamically communicate:

Switch	Feedback scheme	CPE
Alcatel Data Networks 1100 HSS	Closed loop	Alcatel 1100 LSS
AT&T GlobeView-2000	Closed loop	None
Cascade 500	Closed loop*	None
Newbridge 36170	Closed loop	Newbridge 36150
NorTel Concorde	Closed loop	None
NorTel Vector	Closed loop	NorTel Passport
Siemens ESWXpress 3100	Closed loop*	Siemens ESWXpress
StrataCom BPX	Closed loop	StrataCom IGX and IPX

*Scheduled for first half of 1996

Second of a five-part series. *For a look at Part 1, which ran July 10, point your Web browser at url.need http://www.nww.com/atm1.html.*

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Customers who are using equipment or applications that do not employ any flow control can adversely affect the public network's performance.

Caveat emptor

Chances are that your carrier is using or evaluating one of the following platforms for use in its ATM network. How these switches support and perform flow control will influence directly the service you receive and the reliability of your transmissions.

Both Newbridge Networks, Inc. and Northern Telecom, Inc. have fixed part of the flow control problem. When either vendor's enterprise switch is deployed as CPE and used with an ATM service based on the same vendor's equipment, feedback is extended to your premises (see Figure 1, page 35).

Newbridge implements explicit flow control and closed-loop feedback between its MainStreet 36150 (CPE) and its ATM carrier platform, the 36170. NorTel closes the feedback loop when its Passport is installed at the customer premises and communicates with a Vector switch. The Vector is positioned to act as a traffic concentrator to Concorde, the core platform in NorTel's Magellan switch family.

StrataCom, Inc.'s BPX uses ForeSight, a closed-loop rate-based traffic management and bandwidth optimization algorithm that provides high network utilization. The BPX also supports an early implementation of ABR service. StrataCom's recently announced IGX can be used as an ATM premises switch to close the feedback loop.

None of these platforms, however, can stop the traffic at its source: the desktop. For this to occur, the desktop device and/or the application itself must be able to receive and interpret the ATM flow control messages. This may mean using the ATM protocol all the way to the desktop.

But that raises another issue because security is nonexistent when running native ATM protocols. If you are not encapsulating TCP/IP into ATM through a firewall, then your server is vulnerable. The ATM Forum has recently formed a group to address these concerns.

Even though platforms currently do not provide feedback all the way to the source, it is still important to manage the traffic flow between the network edge and the core, as well as within the core, in order to control traffic levels and prevent congestion.

AT&T's GlobeView-2000 uses a rate-based feedback algorithm within the network core that, like StrataCom's BPX, provides an early implementation of ABR service.

Alcatel Data Networks' Avanza architecture uses a closed-loop, explicit rate-based flow control mechanism encompassing both the 1100 HSS WAN switch and the 1100 LSS LAN switch. The 1100 HSS also uses a distinct approach to providing feedback that is incorporated into its RateMaster congestion avoidance system.

Most vendors' platforms send resource management cells from the source and echo the cells back at the destination with congestion information. If a cell travels through three or more nodes, the information is outdated by the time it is relayed.

Alcatel, however, constantly measures congestion factors in each trunk module within each network node and immediately sends information back to the source of each connection at the network edge. The feedback ensures that the source of each virtual circuit receives the worst case congestion information associated with the path for that connection. The advantage of this method is that explicit congestion information is sent to each source connection much faster.

Cascade Communication Corp.'s Cascade 500 will provide closed-loop feedback in the first half of 1996 for support of ABR traffic. Siemens Stromberg-Carlson plans to add closed-loop feedback to its ESWXpress product line in the first half of next year, when the firm will provide support for ABR in an access switch.

To the end of the line

Another component of traffic management that is critical in preventing cell loss is the buffering method of a service provider's platform. A switch's buffering scheme must be well planned in order to support multiple classes of service and service priorities within a network.

Buffering cells is synonymous to making them wait in line. In general, buffering is done at three places: at the ingress, the egress and the switching fabric.

Wherever buffering is done, delay is introduced. Delay must be kept to a minimum for service classes such as constant bit rate (CBR) and real-time variable bit rate (VBR) because they are intended to support time-sensitive applications, such as voice and video.

Ingress buffering is performed at the incoming point to the switch fabric. One problem with that is head-of-line blocking can occur when two incoming cells collide because they are on course for the same output channel. One of the cells and all the cells behind it will be held up while the other is sent out. This happens when buffers are shared among several virtual connections and can result in overflowing input buffers.

Ingress buffering is not widely employed because of this problem. However, when performed on a per-connection basis, it provides isolation of misbehaving users. A misbehaving connection will overflow its own buffer rather than degrade the performance of other users by filling shared buffers. StrataCom's BPX and Alcatel's 1100 HSS both use ingress, per-virtual-circuit buffering.

Egress, or output buffering, is performed after cells have traversed the switch fabric and are ready to be transmitted over the wide-area net. The chief advantage of an output buffered switch is that it is nonblocking, while the input buffered switch can be blocking.

Poorly managed flow control will result in pushing the network close to the congestion cliff — the point where a network switch has gone out to lunch and now waits for a hard reboot.

Most switch vendors today employ some kind of output buffering scheme, the most common of which is shared-memory output buffering. Shared memory has a higher efficiency than dedicated output buffers, since buffer cells are dynamically assigned based on the real-time state of the traffic flow. With dedicated buffers, a high number of cells is required for each port to support ABR traffic. Statistically, most of the dedicated cell space in these buffers will be empty most of the time.

Figure 2 shows the buffering schemes used by several vendors.

Avoiding the congestion cliff

Congestion management is another defining element in the traffic management dimension and is closely related to flow control. Poorly managed flow control will result in pushing the network close to the congestion cliff — the point where a network switch has gone out to lunch and now waits for a hard reboot.

Congestion management relates directly to the caliber of service delivered by your provider. In early networks, this will not be an issue faced every day, since the number of users and level of aggregate traffic will be low and providers will have bandwidth sitting idle.

Eventually, the aggregate ATM traffic on the public networks will catch up to the network capacity, and congestion management will become a critical issue. Taking the time up front to understand how your service provider manages congestion will set your expectations at a reasonable level and help avoid unpleasant surprises down the road.

Buffer zones

Figure 2

Buffering schemes employed at Ingress and egress ports on each vendor's platform:

Switch	Ingress	Egress
Alcatel Data Networks 1100 HSS	Per virtual circuit	Each class of service has shared buffer
AT&T GloveView-2000	None	Shared across each interface shelf
Cascade 500	None	Dedicated for each class of service at switch fabric and line cards
Newbridge 36170	None	Each class of service has shared buffer
NorTel Vector	Per virtual circuit	Shared across switch fabric and output ports
NorTel Concorde	None	Shared across switch fabric and output ports
Siemens ESWXpress	Per output port group	Shared output with logical per-virtual-circuit queuing
StrataCom BPX	Per virtual circuit	Each output port has buffers shared by virtual circuits on that port

A solid congestion management scheme has three goals. First is efficient use of network resources. Service providers naturally want high utilization of network capacity without compromising the quality of ATM service provided to customers. High utilization is beneficial to you because it means providers can keep prices low.

A congestion management system must also provide fair allocation of network resources between many connections vying for service. While this sounds easy, when you consider that there are multiple classes of service and priority levels, and often a single switching fabric, addressing each connection fairly becomes a daunting task. This has been one of the most challenging components of ATM service implementation.

The final objective of a congestion management scheme is simply to avoid the congestion cliff. This often is accomplished by monitoring internal queue thresholds closely and, in cases of mild to severe congestion, dropping selected cells. Congestion control balances each of these aspects, incorporating flow control and buffering in delivering services and controlling potential congestion. When talking about different vendors' strategies, these elements come into play in different ways.

Switch vendors have unique approaches to addressing congestion control. For the most part, their schemes have been studied under traffic simulations and controlled tests within labs. While this provides some comfort, there is always the unknown element of performance under real-life conditions. This is especially true when aggregating tremendous amounts of bursty traffic, as one might expect in a public ATM net environment.

Alcatel uses a scheme called RateMaster to avoid network congestion and optimize use of network resources. RateMaster monitors several parameters for each virtual connection and provides feedback to each connection several times a second.

The scheme employs a unique approach in controlling the rate of ABR and unspecified bit rate (UBR) connections. Instead of incrementally increasing the rate of a connection, which results in a stair-stepped approach, RateMaster increases and decreases all ABR and UBR connections by a percentage based on the available network resources. When extreme congestion is imminent, RateMaster reduces the rates of ABR and UBR connections to the minimum until network resources are once again available. The advantage of this approach is that available network resources are used faster and are fairly distributed among each of the connections.

Cascade's 500 manages part of the struggle for switch re-

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Windows 95

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ing users on a campus or across the enterprise net.

New system policy capabilities will greatly ease the administrative burden on managers and help them tighten security by limiting end users' ability to modify their systems.

Then there's memory management. With a tighter control over system memory, Win95 will free up resources so net administrators can deploy multiple net requestors on a desktop system.

What's in a name?

Support for long file names is certainly one of the most anticipated new features of Win95. At first glance, it may appear to be more like a carrot thrown to end users, but it is an important consideration for network administration on an enterprisewide scale. In fact, without proper planning, long file names could explode into a messy problem.

All of us have had the awful realization that we have no idea what files lie waiting in a directory with a convoluted name such as IRNBHVPR (IRvington New Building HVac PRoject). And if we did venture into the directory, chances are the file names wouldn't be any more descriptive than the directory name.

If just 10% of Windows 3.X users migrate to Windows 95, it would be the second most popular operating system of all time.

Win95 extends the DOS File Allocation Table (FAT) system to create a new file system called Virtual FAT (VFAT), which allows file names of as many as 255 characters. VFAT also stores the last accessed date and file-creation date information to support hierarchical file management.

Net managers will be able to easily identify files by giving them longer, more meaningful names — which, in turn, helps identify files that do not belong on the server. The new format also will help managers perform hierarchical storage management on local drives. Managers can write a program that scans local drives for outdated files and automatically deletes them.

The use of long file names also means that all your users' disk management tools, such as Norton Disk Doctor, need to be replaced. If you run an old disk management program on a drive that has long file names, the extended file name information will be deleted by the disk management utility.

In order to store files with long names on your file servers, you'll also need long-name support on the server operating system. Windows NT servers already support long file names, so you don't have to do anything special with them. If you have NetWare servers, Microsoft intelligently decided to use the OS/2 name space that already supports long file names rather than developing its own NetWare Loadable Module or waiting for Novell to write Win95 support. To store long file names on your NetWare server, just load the OS/2 name space in NetWare as you would for OS/2 workstations.

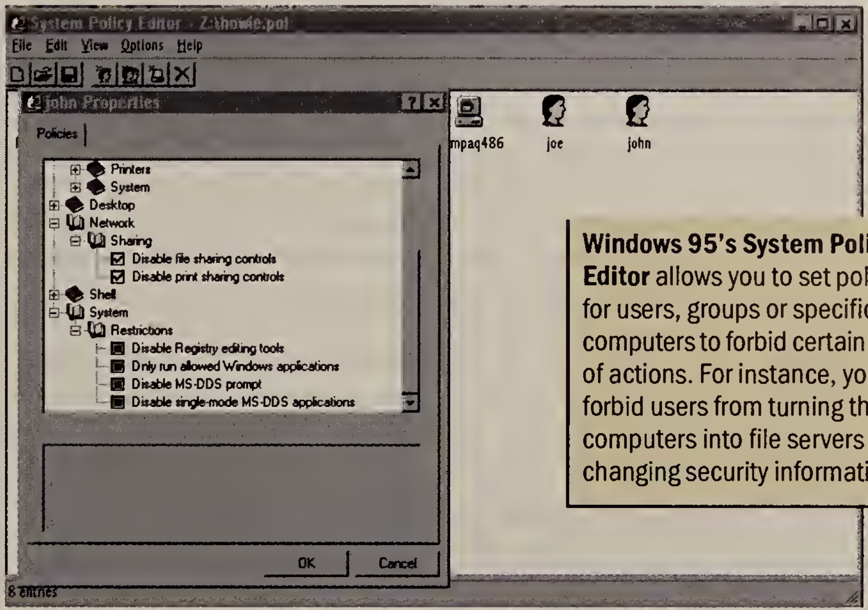
But supporting long file names on your servers is only part of the job. Next, you have to address how to support both long and short file names for the same file. That's because you still likely have 16-bit applications or DOS programs running elsewhere in your network — both of which do not recognize long file names. As a result, Win95 will automatically create a short file name for each file, in addition to the long file name.

The short file name defaults to the first six characters of the long file name followed by "n," where n starts at 1 and increases if there is already a file with that short name. For example, a user running a Win32 application, such as Microsoft Word 7.0, creates a series of files for a fictional account we'll call Livingstone; all the long file names begin with Livingstone. As a result, you'll end up with short file names ranging from LIVING1 to LIVING7. Not very meaningful.

Even worse, if someone edits or spell-checks one of those files using an application such as Word 6.0 that doesn't know about the long names, the long file names will be discarded and all you'll have are those rather meaningless short names.

We recommend that you create long file names that start with the desired short name to mitigate this problem. LIVPROPOSAL, for instance, would be the long file name, which would subsequently be condensed into the short name LIVPRO1.

The long file name problem is something to keep in mind when formulating migration plans. If you wind up with some Win95 users supporting long file names and older Windows 3.X users subject to file name restrictions, plus applications that do not support long file names, you'll be asking for trouble. User A, for instance, could send a file with a long name to User B for review. Since User B is a NetWare 3.11 node without long file name support, the file comes back sans the long file name. When this happens, expect your help desk to get flooded with calls.



☑ Disable file sharing controls
☑ Disable print sharing controls
■ Disable Registry editing tools
■ Only run allowed Windows applications
■ Disable MS-DOS prompt
■ Disable single-mode MS-DOS applications

Windows 95's System Policy Editor allows you to set policies for users, groups or specific computers to forbid certain types of actions. For instance, you can forbid users from turning their computers into file servers or changing security information.

Nice profile

New user profile features in Win95 don't carry the same kind of baggage brought on by long file names.

These new profiles allow systems administrators, or users for that matter, to solve two of Windows 3.X's major management problems. Users can now share the same PC because an administrator can customize their desktop profiles and assign different applications and user privileges to each user's logon menu. User profiles simply separate the user-specific information about managing a Windows workstation from the hardware-specific data.

Even better, if you store the user profiles on your file servers, users can log on to the network from any workstation and still get their desktop and start menu. That will prove especially useful to companies where employees hop among departments or travel to remote offices patched into the enterprise net.

Providing this kind of user portability was a challenge under Windows 3.X. You had to run Windows from the file server and still had problems because Windows 3.X mixed the system and user information in files such as WIN.INI and SYSTEM.INI. For example, if a user that had one brand of video card in his machine sat down at an engineer's PC that had another brand, he wouldn't be able to run Windows unless the systems administrator had written some pretty sophisticated batch files to maintain the SYSTEM.INI and play with the swap file.

Under Win95, you can store user profiles on NetWare or Windows NT servers and set the network server as the default logon. For NetWare, you simply go into the Win95 control panel, select the NetWare client as the default logon and turn on the user profiles. They will then automatically be stored in the SYS:MAIL directory for each user. For Windows NT, you have to run another program to create logon directories.

User profiles also make it easier to maintain the set of applications that a user may access. Under Windows 3.X, the icons that are displayed on a user's desktop are contained in the .GRP files for that user. These files aren't easy to modify if you want to add an application to users' desktops.

A measure of control

Where user profiles allow end users to move from machine to machine or to easily share PCs while keeping a customized desktop, Win95's System Policies allow the network administrator to control the degree to which users may alter their Windows configurations.

The operating system's System Policy Editor allows an administrator to set policies for users, groups or specific computers to forbid certain types of actions by the user. While the Restrictions section of PROGMAN.INI in older Windows 3.X environments allowed you to do similar things, system policies are much broader, in effect limiting user access to the control panel and network configuration as well as the start menu. It is also more secure than Windows 3.X's PROGMAN.INI file, which could be tampered with if a user knew of its existence.

For example, with Win95, you can prohibit users from turning their computers into file servers, changing security information, changing device drivers or making other ill-advised changes. If you work in an environment that needs especially tight security, you can even remove the ability to run any application that you haven't placed on the user's start menu.

Memory overhaul

And there will be room for more of those applications thanks to new memory management features.

Memory management may not seem like an enterprise net issue, but it is if you consider the sheer dint of workstations across the company and the weight of administering each of their slightly different memory configurations. Consider also that Win95 will eliminate the need for memory managers such as QEMM and will allow managers to create standard memory configurations across PCs. Moreover, since network requesters under Win95 run in extended memory, not conventional, you can run multiple net requesters — an important advantage if you're using different network clients across the enterprise.

Ever since the original PC and DOS 1.0, users have been stuck with a 640K-byte limit on the amount of memory available for DOS applications. Things got tight over the years as desktop systems were outfitted with multiple device drivers and TSR programs to provide services to user applications.

THANKS FOR THE MEMORY

Windows 95 needs 16M bytes of memory to outperform Windows for Workgroups 3.11 running 16-bit Windows applications.

A typical corporate PC has more than 140K bytes of such programs, including network requestors, drivers and protocols, as well as DOS utilities, such as DOSKEY, SHARE and SMARTDRIVE. Add a CD-ROM drive, a sound card, a scanner or other hardware devices, and the total driver burden can easily top 250K bytes — leaving less conventional memory to run user applications.

Network administrators have learned to deal with this problem by using memory managers such as DOS's EMM386 and memory optimization programs such as

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MEMMAKER. These programs can take some of the driver load and store it in the unused portions of the 640K- to 1M-byte memory region.

DOS memory managers have their own problems. They are time-consuming to install, requiring an optimization phase for each system on the net. And even with the best memory managers, it's a rare Windows 3.X system that can provide 500K bytes of memory to an application in a DOS box.

Under Win95, this memory management nightmare is almost over. That's because all the common TSRs and device drivers, including CD-ROM, network and sound card drivers, are implemented as 32-bit protected mode code. This saves conventional memory for DOS applications because the operating system loads in extended memory.

On our primary Win95 machine, we have 584K bytes of conventional memory available in DOS boxes under Windows after simply installing Win95. If we perform a little memory optimization by adding a line to the CONFIG.SYS to call EMM386, we can increase memory to 608K bytes. This system is running network clients for both Windows NT and NetWare and has a Sound Blaster and CD-ROM drive enabled.

DIRECTORY ASSISTANCE

NetWare Directory Services support for Windows 95 is promised for delivery by both Novell and Microsoft just 60 to 90 days after Win95's release.

Since a typical machine will have significantly more conventional memory, users that now must exit Windows 3.X to run large line-of-business applications will be able to run them in a DOS box within Win95. This simplifies station setup and allows users to multitask while running critical business applications.

Resource handling

Win95 improves System Resource handling in several ways. First, it doesn't use System Resources for its own operations, including OLE 2, which was a huge resource hog under Windows 3.X.

Under Windows 3.X, 20% to 35% of the System Resources are used up by Program Manager before you even start your first application.

Similarly, 32-bit Windows applications don't use System Resources so when you switch any of your applications to Win95, more resources will be available for your old 16-bit applications. Finally, Win95 empties System Resources when no 16-bit applications are running; as a result, users will typically see a doubling of available System Resources. Under Windows 3.X, System Resources are not emptied by the operating system until the user terminates the session.

CHANGE OF POLICY

Windows 95's System Policies can be extended by application vendors to add additional controls to the operating system.

The biggest effect of Win95 on your life, at least in the short term, is in simply making the migration. If you plan carefully and take advantage of this new functionality, you should find that you can actually play a little golf in 1996.

Marks is founder and chief scientist of Tiger Team, a South Norwalk, Conn., consulting and education firm dedicated to helping corporations migrate to 32-bit Windows 95. He can be reached at hmarks@tigerteam.tuckernet.com.

In-box

Continued from page 33

RMON clarified

Your article "RMON2 is almost here" (July 17, page 19) contains numerous inaccurate assertions about the features and functionality of RMON and RMON2. First, the article states that RMON2 extends the packet capture and decoding capability of the RMON management information base (MIB). The truth is that RMON has never had any decoding capability as part of the standard MIB. Any decodes that are found in an RMON system are based on proprietary extensions supplied by the specific RMON vendor.

Second, the article says that RMON2 "decodes packets at Layers 3 through 7 of the OSI Model..." This statement is doubly misleading. RMON2 does not decode packets, and RMON2 will only improve on existing RMON by providing the ability to monitor logical addresses, which can be found at the network layer (Layer 3). That is as far up the OSI stack as RMON2 will go.

In order to move any higher up the stack, RMON2 would have to track specific individual logical connections, which are established at the transport layer (Layer 4). Simply viewing traffic between two logical addresses is a far cry from Layer 3-7 analysis.

Todd Humphreys
Westborough, Mass.

ATM

Continued from page 36

sources by using a quad-plane architecture. Each class of service (such as CBR and VBR) has its own switching fabric and, thus, is segregated completely. Additionally, Call-Master, which is a connection admission control algorithm, matches connections against available network resources while maintaining the required quality-of-service (QoS) contracts of existing connections.

Newbridge's 36170 uses a Scalable Multi-priority Allocation of Resources and Traffic (SMART) scheme to guarantee that QoS objectives are achieved while optimizing switch resources. Each class of service (CBR, VBR, ABR and UBR) has its own segregated queue within the shared output buffer.

Additionally, the 36170 provides priority levels within each class of service. Two cells from CBR connections may be within the CBR queue, but one may have a higher priority than the other and, thus, will be transmitted first.

Internal thresholds in the output queues indicate the congestion level that the switch is experiencing. In a state of imminent congestion, the 36170 will decrease incoming traffic to its minimum requirements and implement policing algorithms on a per-virtual-circuit basis. The internal thresholds that signal impending congestion are all configurable by the service provider.

NorTel's Magellan Vector and Concorde switches implement a Multiple Priority System (MPS) to ensure fair delivery of traffic. Magellan MPS allows the network to meet class-of-service guarantees to each customer while optimizing the use of network resources. NorTel gives service providers the flexibility to define the buffer sizes and thresholds to satisfy QoS for each connection. Under congested conditions, the Magellan family uses emission priorities to help indicate which cells are dropped first and which are transmitted first.

StrataCom's BPX employs ForeSight and FairShare to deliver service and avoid congestion. ForeSight provides the feedback information in the network so that resources can be optimized. FairShare uses per-virtual-circuit queuing and per-virtual-circuit rate scheduling to allocate resources among connections. Per-virtual-circuit queuing ensures that a single misbehaving user does not rob resources from other customers. The rate scheduler adjusts the rates on individual ABR and UBR connections, depending on the available network resources.

Traffic management of early ATM switches left much to be desired in terms of flexibility, but that has been largely addressed in second-generation switches.

Both StrataCom and NorTel have the advantages of experience and time with respect to their traffic management algorithms. ForeSight was implemented with the IPX platform, and MPS was implemented with Passport.

Traffic management schemes from other vendors look good on paper and, in theory, should work. But the proof of which solution works best will not be clearly established until ATM networks are carrying hundreds or thousands of users' voice, video and data traffic.

Policing traffic is about the same as policing people. Law-abiding citizens, and connections, have little or no problem with policing actions. But users that stretch or exceed traffic contracts may have to pay the price.

The traffic contract is the contract between your virtual connection and the service provider's network. It specifies the class of service, the priority level of the connection, and the QoS parameters (such as cell loss and cell delay variation) that define a connection. These definitions are provisioned at the call setup. For permanent virtual circuits, this is a onetime deal. For switched virtual circuits, it is negotiated at each call setup.

Policing mechanisms must ensure that traffic violating the traffic contract are the first cells dropped when the network is congested. Policing is generally done at the ingress to the network, on the ATM UNI connection, based on Usage Parameter Control algorithms.

Policing is a euphemism for dropping cells. Early policing implementations simply dropped cells that violated either the peak cell rate or the sustained cell rate, regardless of network congestion.

Second-generation switches allow the service provider either to tag cells that are in violation before passing them through or to drop the cells. If a network switch is experiencing congestion further down the circuit, then tagged cells are dropped first.

You may want to be sure your carrier is using a second-, not a first-, generation switch for this reason (*NW*, July 10, page 45).

Alcatel, AT&T, Cascade, Newbridge, NorTel and StrataCom all support second-generation-type policing schemes that are configurable per-virtual-circuit. Siemens is promising such support by the first half of next year.

Proceed with caution

Traffic management of early ATM switches left much to be desired in terms of flexibility, but that has been largely addressed in second-generation switches, which are better at managing different traffic classes and service types simultaneously.

Understanding the limitations and flexibility of your service provider's network will help you understand how your traffic is managed on the public network. The state-of-the-art networks have explicit flow control, egress buffering, a real-world-tested congestion control mechanism and advanced policing options that can be configured per connection by the service provider.

Before you move your business traffic to an ATM service, you had better take a close look at how it will be managed, especially when the network becomes congested.

Once you are confident in the "air traffic controllers" and the stability of "the airplane," you will need to begin the translations between your networking requirements and the ATM-speak of connections.

Next month, we'll take a close look at different classes of service, how they have evolved, when to use which class, and what the vendors and service providers are owning up to. Get ready to take the plunge into ATM alphabet soup!

Gage is a consultant at Tele-Choice, Inc., specializing in ATM and other broadband services and equipment. She can be reached at (201) 239-0700 or at beth_gage@telechoice.com.

Management Strategies

Covering: Career Insights and Innovations
in Managing Staff, Budgets and Technology

Briefs

■ **The Global Information Infrastructure Commission (GIIC)** *has launched a Web site that will further its mission as a clearinghouse for* **global net infrastructure** *planning.*

The site will provide information about the GIIC and its mission as well as an archive of commission reports. The site will also have hyperlinks to more than 150 communications- and information technology-related resources in 50 countries.

GIIC is a nonprofit organization that promotes advanced networks in developing countries.

To visit the GIIC site, point your Web browser at http://www.eds.com/giic.

■ **Digital Tools, Inc.** *has released its* **AutoPlan Exchange** *product that enables its AutoPlan II project management software to pull data from Oracle 7 database management systems.*

The new product will enable project managers to mix their own data with corporate information, helping them to develop more reliable estimates for project costs and schedules. AutoPlan Exchange and AutoPlan II are modules in Digital Tools' client/server-based AutoPlan Enterprise family of products. The software runs under various versions of Unix as well as Windows, and costs between $495 and $10,000.

Digital Tools: (408) 366-6920.

■ **PeopleSoft, Inc.** *has formed the* **PeopleSoft Federal** *division that will offer its PeopleSoft Human Resources Management Suite (HMRS) for Federal Government software. The new package is a customized version of the existing PeopleSoft HMRS offering and includes programs that help managers maintain employee data in federally approved formats, such as Personnel Actions Tracking (SF-52) and the Thrift Savings Plan. The software will be available later this year.*

Pricing starts at $100,000 per module.

PeopleSoft: (510) 225-3000.

A different kind of job review

Discussing career goals with your boss is an important step in meeting your goals.

By Frank Schoff

A vital yet potentially awkward step in developing a career strategy is to have an open and frank talk with your present employer.

Opening such a dialog can be an extraordinarily difficult step for many people but one that can yield immeasurable results. In fact, I would guess that at least half of the individuals I work with skip this step, considering it too sensitive.

But you've got to seriously consider the consequences before blowing it off. It is this type of open exchange that will help you determine if your current employer is willing to help you meet your personal career goals, something that will affect your decision to stay or leave.

An icebreaker

The tool that will help you break the ice with your boss is a complete career audit in which you map out how well your current job satisfies six criteria: job content, geographic location, growth potential, job security, compensation and fringe benefits (*NW*, July 17, page 67). Other factors may play a role in career auditing, but most of them can fit nicely into one of those six categories (see story).

However, don't just take the audit in its original form, drop it on your boss' desk and say, "I want to talk to you about this."

Instead, you need to refine it a bit. To do this, find an objective third party who is willing to review the audit with you. That person should be someone whose opinions you respect, who can provide a good reality check by challenging your views and who is sufficiently knowledgeable concerning business/technology careers.

There are three potential problems with using a spouse or someone else close to you as a sounding board.

That person may share your personal views and interests so strongly that he wouldn't question them. He also may be reluctant to challenge your views out of fear of damaging the relationship. And the individual may view the discussion as an opportunity to further an item on his personal agenda with you.

So you're probably better off seeking out a professional associate who can speak openly and does not work for the same organization you do. After that discussion, you may want to modify your audit for the meeting with your employer.

Here are a few things to do to get ready for that meeting:

■ Prepare a formal document that defines your interests and goals for each of the six audit criteria.

■ Meet with your boss in advance, explain the process you want to go through and provide the audit document.

■ Make an appointment to conduct the career review. Set aside at least an hour, and keep everything else off the agenda.

■ Prepare yourself for the meeting. You should be ready to explain not only what your goals are, but also the rationale behind your thoughts and the efforts you are willing to put forth to achieve your goals.

■ Most importantly, avoid reviewing your performance once the meeting is under way. A career audit review is not the same as a performance appraisal. Make it clear to your boss that you want to stick to discussing the six audit criteria. Remember, your sole objective is to determine the degree to which your current employer can help you achieve your career objectives.

When it's over, the career review may shed light on the fact that you have an ally who wants to help you achieve your goals. By taking the initiative and providing a structure for the meeting, you have opened the doors to continued, productive discussion.

On the other hand, you may find that your present employer has neither the interest nor ability to help you achieve your goals, which may lead you to realize that your personal interests are best served by seeking employment elsewhere.

In either case, you will have gained knowledge concerning career progress that you didn't have before. That knowledge will serve you well in your role as your own business agent and career manager.

Schoff is president of Management Recruiters in Cedar Mountain, N.C. He can be reached at (704) 884-4118.

On-line job search

If a career plan review with your current employer indicates it's time to move on, here are some suggestions for getting job search advice and employment listings on-line:

- **Bernard Hodes Advertising** offers its CareerMosiac site that enables you to submit a single query to search several job listings in Usenet. The address is **http://www.careermosaic.com.**
- **E-Span** has a service on CompuServe with job listings, interview hints and suggestions for writing a resume. It also includes a link to the CompuServe Career Management Forum. On CompuServe, type **Go ESPAN.**
- **Online Career Center** maintains a gopher server and Web site. Both enable users to search for jobs by region, city or company. They also have useful advice about a number of other related topics. The Gopher server address is **occ.com.** and the Web address is **http://www.occ.com/occ.**

Defending the job audit criteria

There were a number of inquiries from last month's story about conducting a career audit (*NW*, July 17, page 67) asking why the audit was limited to six criteria.

The audit was designed to determine what people want from a job and how well their current position fulfills those criteria. The criteria — job content, geographic location, growth potential, job security, compensation and fringe benefits — have been used by many career counselors throughout the years to help clients develop a career strategy.

However, there is clearly no magic list. If you don't like the six above, make up your own. But as you do, you may find that most of your personal criteria can fit into one of the six categories.

For instance, some argue for adding job satisfaction or quality of life to the list. You could, but both are already incorporated in the six criteria. People who find they have achieved a good balance in each of the six criteria are likely to have a high level of job satisfaction and quality of life.

What about trying to factor in personal work relationships? Without a doubt, these are important. However, those relationships are just a variable in your career decision. Few people would opt to work somewhere where they make lots of money but are hated by most people, regardless of the other criteria. Further, while you can rank the relationships you have in your current position, it's next to impossible to predict the quality of relationships you'll have somewhere else.

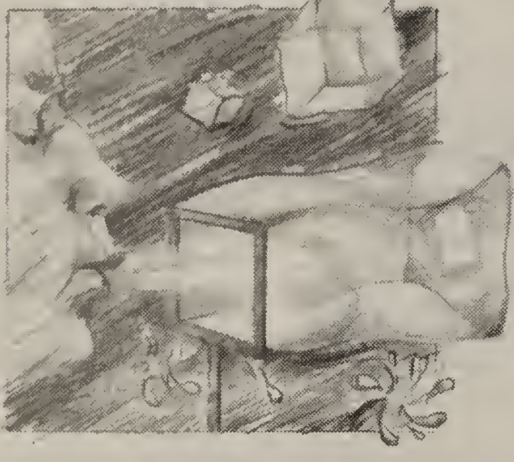
Some people would even go so far as deleting job security from the six criteria because there is no such thing anymore. They may have a point, but some positions are still less risky than others. Incidentally, if job security is high on your list, you'd be well advised to consider something other than a career in information technology or networking. On the other hand, if employability is more important, you've made an excellent career choice.

Still others say you need to consider factors more specific to an individual's situation, such as an inability to move up the corporate ladder. But when pressed to explain why they still work where they do if this personal factor is so bothersome, these people typically respond that they couldn't get their current salary or benefits elsewhere or they didn't want to relocate.

What these people have clearly shown is that at least a few of the six criteria are more important to them than this personal factor. And that is just what a career audit is all about: finding the things that are most important to you and sticking with them.

No matter what factors you use in a career audit, once you've ranked them in some order of priority, you've got to concentrate on improving those that are the most important to you and the ones over which you have the most control.

ORIGINALITY



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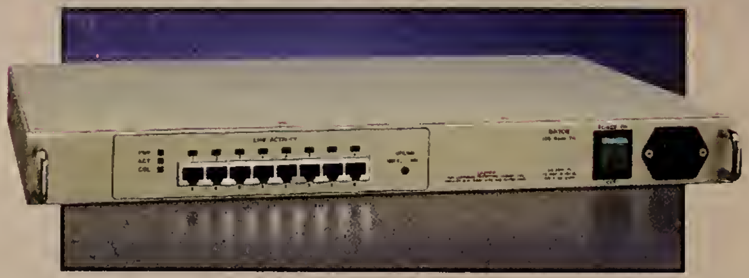

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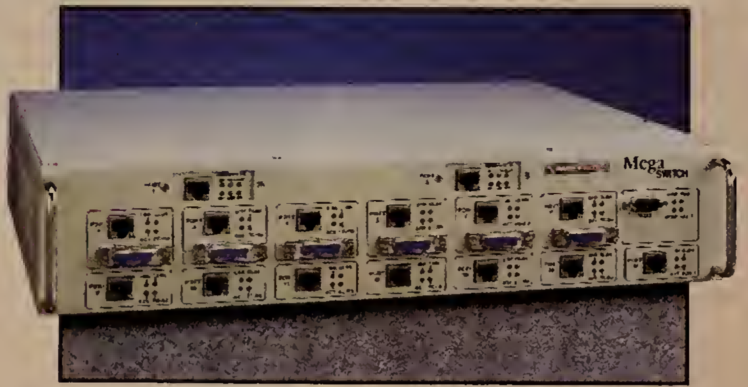

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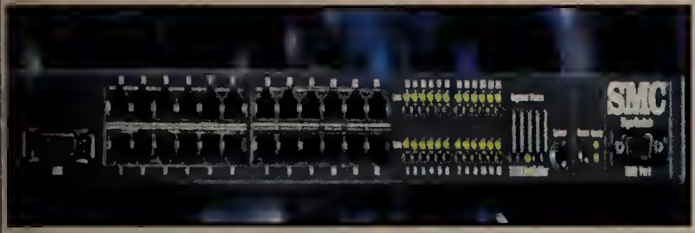

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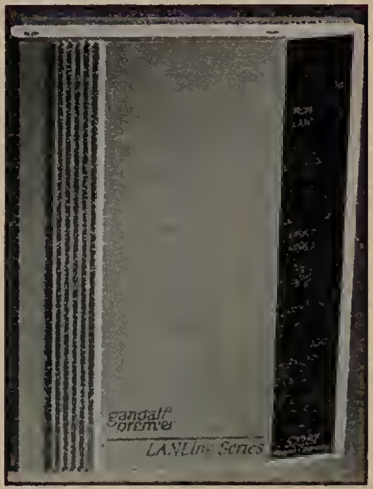

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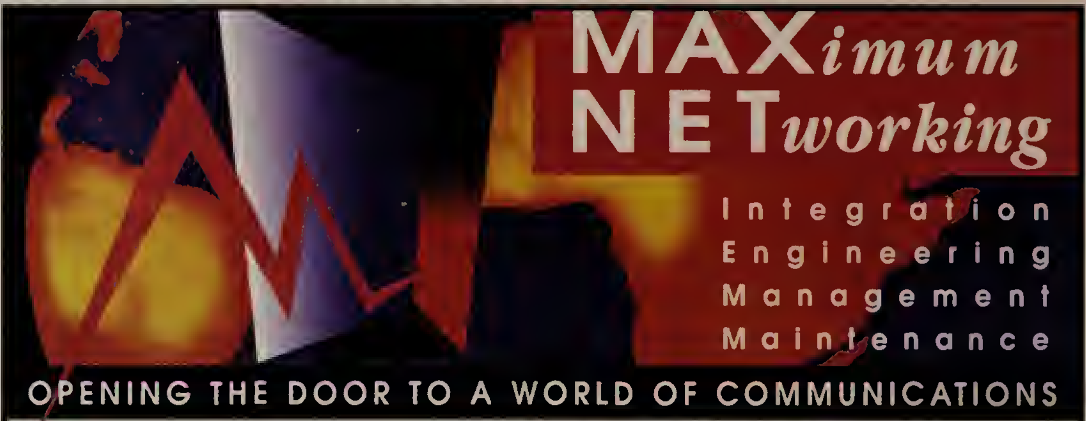

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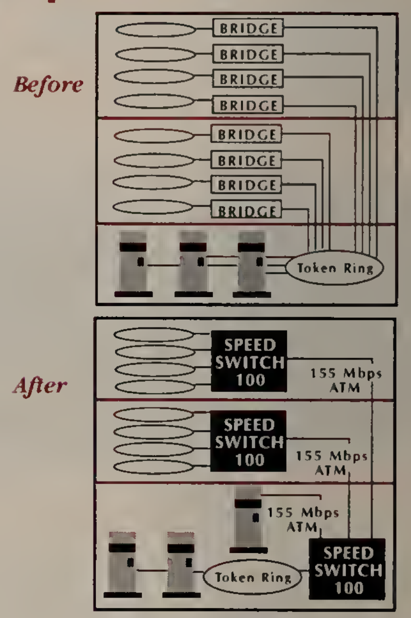

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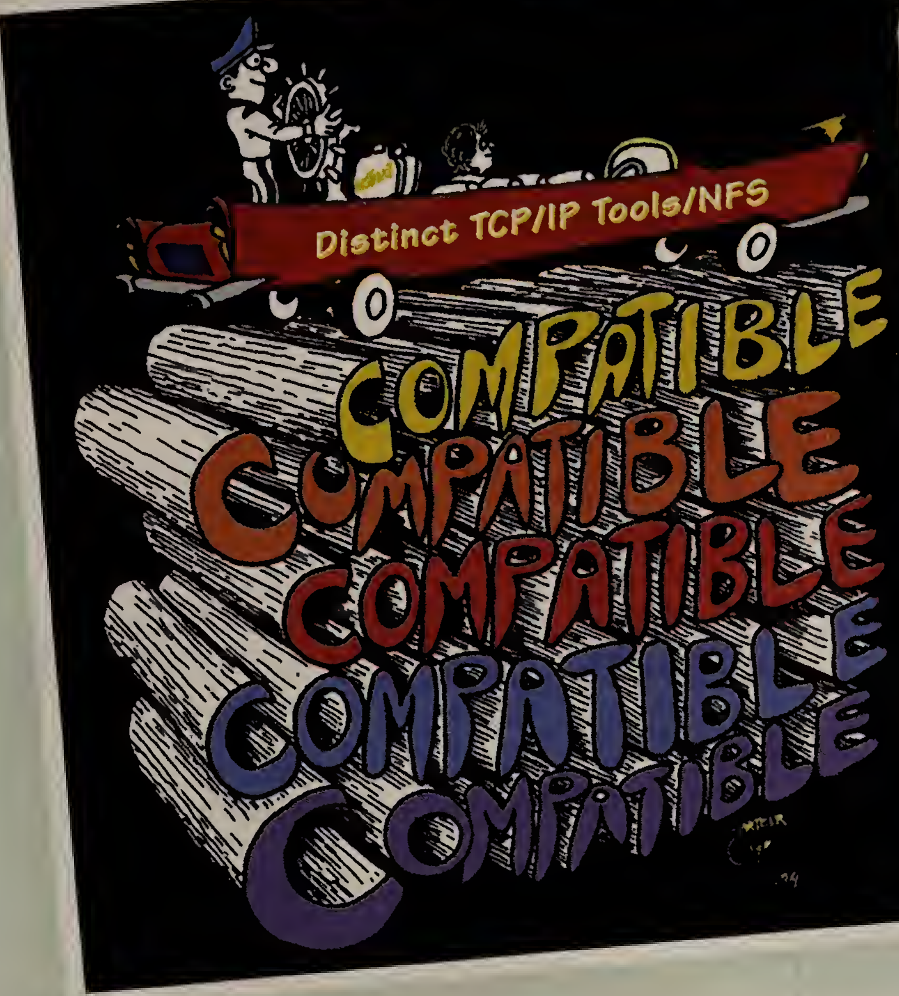

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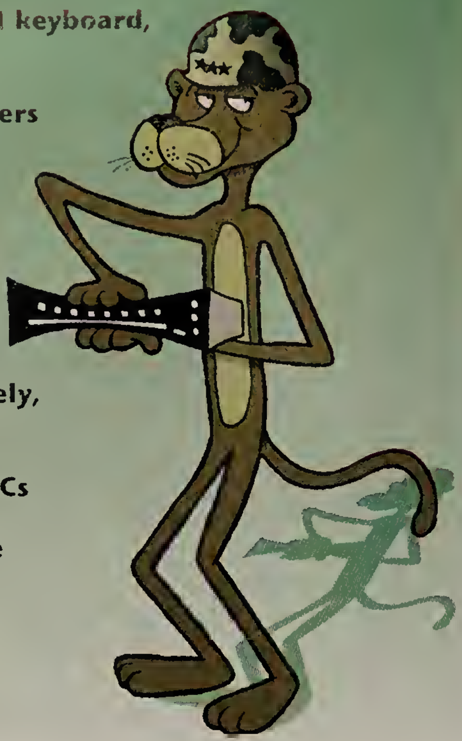

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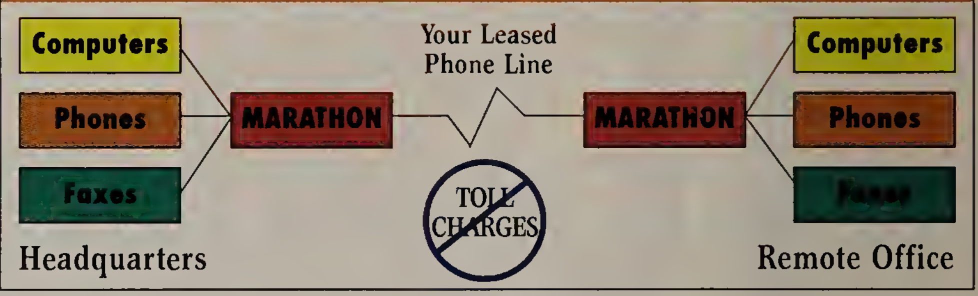

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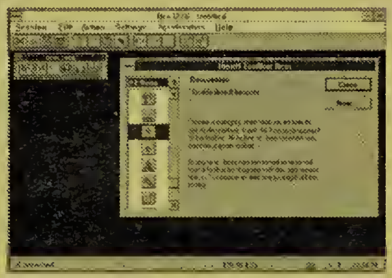

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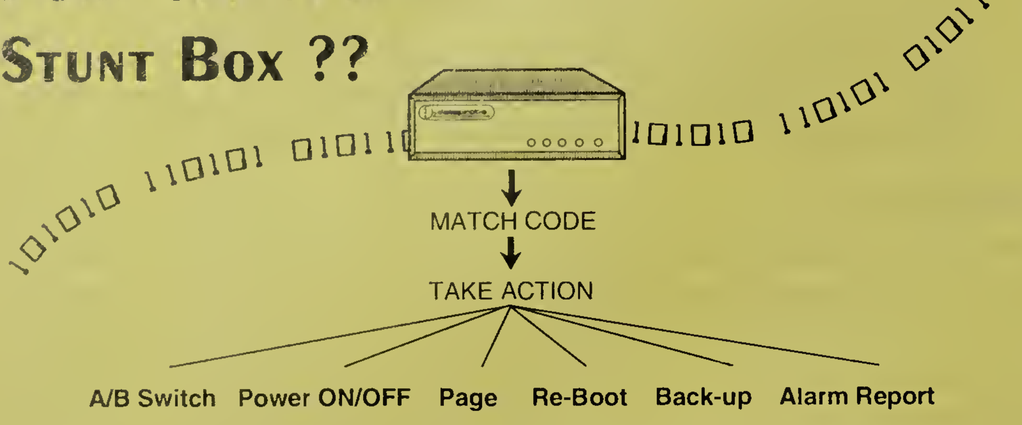

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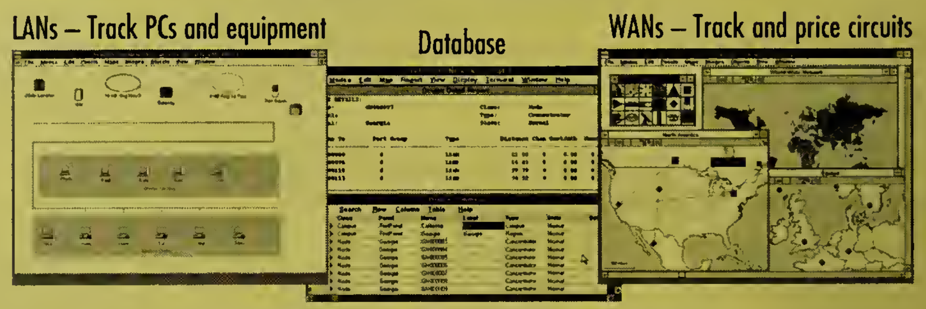

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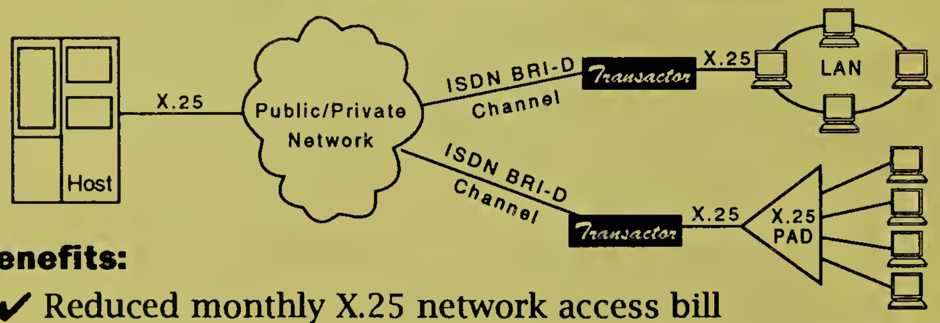

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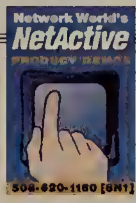

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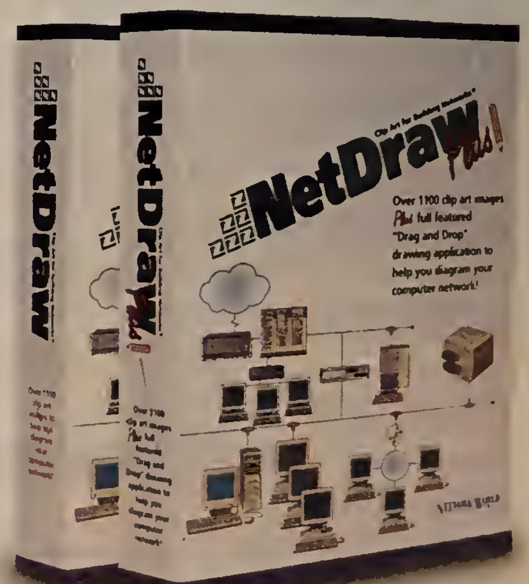
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Novell

Continued from page 1

work management tool could be built into NetWare, reducing the number of pieces users would have to buy in order to build and manage client/server networks.

Likewise, application development technology in Tuxedo could be ripped out and built into AppWare, leaving Tuxedo's middleware and transaction monitoring functions as a new product with a new name.

Novell will also articulate where it sees networks going during the next half decade and will deliver a product road map that shows users how Novell will take them there. What's more, the company will provide new information on SuperNOS, Novell's next-generation operating system.

Under increasing competitive pressure from Microsoft Corp., Novell is trying to change perceptions that it is only "the NetWare company," in reference to its widely used network operating system. Novell is also trying to erase criticism that it lacks a unifying corporate vision and has cobbled a disjointed product line.

The goal is to make Novell and its strategy, rather than NetWare, uppermost in users' minds, said Christine Hughes, senior vice president of corporate marketing at Novell.

But the new strategy is also key to battling Microsoft, which has used its vaunted marketing machine to position itself as a high-profile player despite Novell's massive market share lead in networking.

"We have never clearly articulated our vision of how we see the industry evolving," Hughes said. "That's what our customers are going to see."

Hughes says *Novell is attempting to clearly articulate its long-term vision.*

While NetWare will still be Novell's core product, the company will put increasing emphasis on directory services and other building blocks for networked applications that go beyond NetWare's traditional file and print services, Hughes said. Novell will emphasize sales of those services and applications that use them, using NetWare as a delivery mechanism.

Competitors such as Microsoft, with its Windows NT applications server and the upcoming Exchange message server, are forcing Novell to shift its emphasis to higher level services, analysts said. Banyan Systems, Inc. is following a similar strategy, de-emphasizing its VINES network operating system and concentrating on providing cross-platform network services.

Rather than marketing a list of products with unrelated names, Novell will offer its products in a number of families, each using a particular brand motif. Novell's desktop applications will continue to be grouped under some version of the PerfectOffice name, and its groupware will keep the GroupWise tag.

Other products, however, will be renamed and packaged in groups such as operating systems or middleware, although those categories have not been finalized, Hughes said.

Novell will also consolidate its many layers of certification for third-party products that work with NetWare. It will offer one or two levels of compatibility testing, enhance its independent software vendor support program to make certification faster and easier, and increase the number of third-party products available to NetWare users, Hughes said.

And some analysts and users wonder whether this makeover can make up for past confusion. The repositioning, said Michael Goulde, an analyst at Patricia Seybold Group, Inc., "is like putting a Band-Aid on a bullet hole."

"[The name] NetWare is entrenched. Maybe five or 10 years down the road, people will think about Novell instead, but it will be slow," said Niraj Patel, network and telecommunications manager at GMAC Mortgage Co. in Elkins Park, Pa. "It's like Procter & Gamble — you think about picking up some Tide, not about P&G." ■

Airsoft

Continued from page 8

information needs to be shared across the remote link.

The result is a performance gain ranging from two to 10 times, Staiger said.

Happy users

"People who complained an awful lot about running FileMaker [database application] remotely now say it performs nearly the same as if they were sitting on the LAN," said Marc Norman, president of Prefix Consulting in San Francisco. Norman has tested Powerburst for a client, KinderCare Learning Centers, Inc., a nationwide child care provider. "You need about 20M bytes of free space on the client PC to [perform caching], but that really hasn't been a problem."

KinderCare is conducting a Powerburst pilot test with 26 remote users and is likely to connect its 1,500 nationwide centers once the pilot project wraps up this summer.

Powerburst will be available in September. Pricing is volume-based, ranging from $60 to $160 per client. The central-site agent ranges from $498 to $995. Each central-site agent can support as many as 64 clients.

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Reform

Continued from page 1

and long-distance companies, as well as cable television providers. Many users feel the bill could speed delivery of new network products and services, but they question whether the legislation would really make the U.S. more competitive in the world telecommunications market.

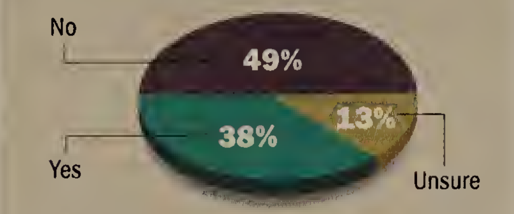
Overall, nearly 60% of respondents say the bill does not do enough to promote the interests of business users, and nearly two-thirds say it fails to protect consumers.

Yet less than 40% say President Clinton should veto a reform bill akin to that passed by the House, perhaps believing that any reform effort is better than none at all.

"Whatever comes out . . . will change the environment of the '90s just as divestiture did in the '80s. No matter how the law is written, the [phone companies] will have to do a better job," said one respondent.

VETO OR NO?

Do you think Pres. Clinton should veto a telecommunications reform bill if the final legislation is similar to that adopted by the House of Representatives?



GRAPHIC BY TERRI MITCHELL

Spread too thin

Other readers interviewed about the findings said they worry that reform could unshackle the Bells too soon.

"We'll end up with a bunch of jacks of all trades, masters of none," said David Eisenlohr, vice president of telecommunications and computer operations for the Pacific Stock Exchange in San Francisco. "The Bells will become full-service shops, but with less expertise in areas my organization needs assistance."

Eisenlohr said his service quality from Pacific Bell has plummeted during the past six months as the telephone company has prepped for its new roles in long-distance and cable television. "The end user is the loser," he grumbled.

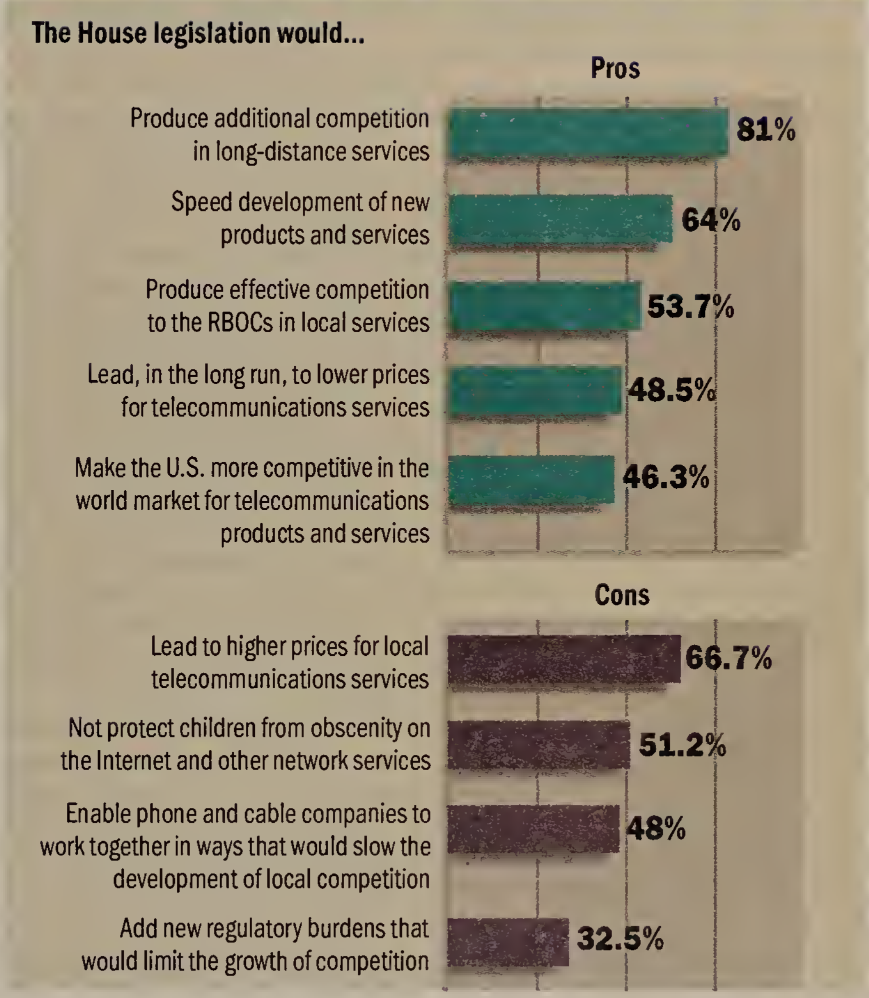
One ironic aspect of the reform effort is that substantially more network managers feel the House bill would do better at promoting competition in the long-distance market, which is already wide open, than it would at boosting local-loop competition.

"The bill doesn't have as much potential as it could have if it had followed the Senate bill, which requires much more demonstration of local competition," said Phil Evans, director of telecommunications at Perot Systems Corp. in Dallas and a member of the International Communications Association user group.

For example, the bill allows telephone companies to own cable TV facilities. But one of the best ways to foster competition would be to get telephone companies and CATV companies to compete, not merge, Evans said.

That concern is shared by respondents, with nearly half saying the bill would let phone and cable companies work together in ways that would slow the development of local competition.

Balancing the pros and cons of telecom reform



Readers also worry that federal legislation could undermine state efforts to deregulate. "In New York, there is tons of competition" and service quality is rising, said Tom Maile, vice president of telecommunications at CBS, Inc. in New York.

NYNEX Corp. recently got freedom to compete in long distance in exchange for locking in local rates for seven years. But that deal could be wiped away under a national reform effort, with NYNEX sailing free and clear into long distance.

Local government entities have other worries. As a taxpayer-supported entity, the Bay Area Rapid Transit (BART) commission in San Francisco is required to take the low bid for service, said Sesh Seshadri, manager of communications.

BART may be forced to go with a new carrier that doesn't have the knowledge and experience to handle its needs. "It scares me," Seshadri said.

Dan McFarland, general manager of the Department of Telecommunications and Electricity for the city of San Francisco, said the bill will open up competition, but players in the capital-intensive business will be slow to roll out new services.

Despite user worries and unanswered questions, nearly half the respondents say they think a telecommunications reform law will be passed by Congress and approved by the White House this year. ■

Global Net

Continued from page 6

vice (see story, page 25).

The Global Network, which includes Advantis in the U.S., is IBM's value-added network that has more than 850 offices in 100 countries serving 25,000 users worldwide.

The Notes service will be available to a limited number of users this year, with general availability expected in early 1996. Fernand Sarrat, general manager of IBM's Networked Application Services, said he expects to have the service in place in about 40 cities and 450 locations by the end of this year.

"The service will allow for the interlinking of far-flung enterprise Notes users in a way that, up until now, has been very difficult to do," Sarrat said.

With the new service, users also will be able to make their Notes applications available on the Internet via support for Lotus' InterNotes Web Publisher, which automatically converts Notes applications onto World-Wide Web pages.

One of the earliest users of the new Global Network Notes service is Ogilvy & Mather Advertising, which is currently in the process of linking its 272 offices in multiple countries worldwide.

Analysts said teaming of the Global Network and Notes is the first step in IBM's strategic drive to spread the Notes religion to as many users as possible and to help make it a collaborative workgroup standard.

Tom Austin, a consultant with the Stamford, Conn.-based Gartner Group, Inc., said new service would be most useful to firms looking to outsource their WAN tasks for small branch offices scattered around the world. He said it would make less sense for firms with centralized servers.

"Setting up a Notes infrastructure is not brainless," Austin said. "It takes some smarts to get it under way. [Global Network] makes it almost painless except for the guy who writes the check."

IBM seems to have a mixed view of AT&T. While IBM shied away from a full frontal attack, the new Global Network Notes service is a direct response to AT&T's announcement of its own Notes service, analysts argued. IBM's Sarrat, however, said IBM expects to develop ties with Network Notes users.

Austin said IBM's announcement was a knee-jerk response to AT&T, and, as a result, IBM's introduction lacked any specific details, including how it intends companies to use the Global Network for electronic data interchange and other electronic commerce applications.

Jeff Held, an analyst with the Vienna, Va.-based consultancy Ernst & Young, said that two things will determine the success of both IBM's and AT&T's public Notes services: pricing and the vendors' ability to manage vast Notes enterprises.

IBM said it would price the new service by the size of the project as a whole, while AT&T charges on a per-seat basis. ■

NetworkWorld

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AT&T

Continued from page 1

fraud. Such a move is needed to kick start the electronic commerce market since users fear getting stuck with bills for unauthorized purchases made when credit card numbers get snatched off networks, noted Christine Heckart, senior consultant for broadband services at TeleChoice, Inc., a consulting firm in Verona, N.J.

Unfortunately, this week's sweeping Internet blueprint will provide only a framework for more detailed product and service announcements to come, analysts said. Several of them cautioned that AT&T is short on details about when key linkages and new services will be available, and how they will be achieved.

What is clear is that AT&T will provide gateways from its existing transport and application services — such as ANCS and Network Notes — into the 'Net and then add front ends that match the user's interface of choice — such as a NetScape Internet browser or Lotus Notes. Then it will layer a consistent set of security, directory and navigational tools over all the connected networks.

This way, for example, an ANCS user could communicate with either an Internet user or an AT&T Network Notes user with the Internet, using the formatting and commands already familiar to him.

More importantly, AT&T could provide end-to-end, secure links that traverse AT&T's networks and the Internet for users who want consistent access to data across private and public nets alike.

Basic Big Three strategies

AT&T
Integrates all existing AT&T business and consumer services, including telephony, with the 'Net.

MCI
Provides access services, front-end navigational software and consumer-oriented on-line content.

Sprint
Provides access services and a consumer-oriented Web page for service ordering and queries.

AT&T's planning documents indicate that the company also plans to offer customized access for individuals and business customers so that users can get consistent access from home, work and other locations. The carrier also plans to offer content services that are tailored to specific customer segments.

AT&T's game plan is broader than Internet intentions announced thus far by the likes of Sprint Corp. and MCI Communications Corp., which have offered predominantly direct access services and have recently gotten into front-end navigational software packages. However, MCI last week formed a joint venture with News Corp. to provide on-line content to consumers and businesses, and both MCI and Sprint, as well as several regional Bell operating companies, are rumored to be building virtual private Internets (*NW*, May 15, page 15).

However, "AT&T's plan still needs polishing," said Steve Sazegari, president of Tele-Mac, a telecommunications consultancy in Foster City, Calif. "So far, AT&T is saying they are going to be all things to all people, which usually means that in the near term, very little gets accomplished."

"All the carriers are trying to position themselves so they do not get overwhelmed by the Internet," added Peter Bernstein, president of Infonautics Consulting, Inc. in Ramsey, N.J. The carriers eventually will be challenged to convince customers to use their telephone networks instead of the Internet to make a phone call "once the PC becomes their primary communications tool," he said.

As a baby step in that direction, AT&T tomorrow also will introduce its dial-up Internet access service. Until now, AT&T has offered access services to the 'Net only via its frame relay service. ■

Specs

Continued from page 1

tion Consortium (MIC), users said.

The OSF tried to build a standard management framework with DME but shuttered that work when it became too unwieldy. The MIC attempted to develop code for application interoperability but was deflated earlier this year when management platform vendors fled the organization.

"I'm highly suspect of a vendor's, or group of vendors', ability to remain objective over the long term to produce something useful," said John Ferreri, manager of information systems research and development at Block Drug Company, Inc. in Jersey City, N.J.

But the alternative to vendor consortia — specifications hammered out by formal standards bodies — simply does not work because the standards process takes too long.

"Standards really don't matter," said Edith McCarty, systems support analyst at Tallahassee Community College in Florida. "They're for developers and idealists."

As a result, users have resigned themselves to working with point products and proprietary solutions that interoperate only after extensive integration work and custom programming. But they hold out hope that collective pressure will force vendors to develop products that meet the needs of enterprise network customers.

At the conference, users got broad-brush overviews of ambitious vendor initiatives and product developments promising an end to today's piecemeal approach to multivendor network and systems management. Like customers, suppliers have concluded that the current standards process — committee consensus through organizations such as IEEE, X/Open Company, Ltd., the Internet Engineering Task Force and International Telecommunication Union — accomplishes nothing.

Seemed like a good idea. . .

"The standards process doesn't work," said Ray Williams, IBM senior technical staff member for network management systems. "The only way to do it is through cooperation between vendors."

But Williams' statement was largely waved off by users. Proclamations of cooperation among competitors are viewed as flowery enticements to a particular vendor's offering rather than a genuine effort to achieve interoperability.

"It's like IBM to introduce [cooperation] as a concept while not necessarily backing it up with products," said Block's Ferreri.

"We'll just go with something proprietary and hope for the best," said George Dobbs, senior systems analyst at Phoenix Home Life Mutual Insurance Co. in Hartford, Conn. "If we can get 80% of the solution, we'd be happy."

But some users say that, unless they can successfully influence product development through unified pressure — an effort that has not taken shape yet — vendor-initiated efforts are better than nothing.

"If this is the only way to do it, then it's the way to get it done," said one network manager from a large computer manufacturer based in Pennsylvania. "There has to be agreement sometime. Somebody has got to build a standard." ■

Back to Reality

Internet mania can turn network managers' comfort into affliction

Someone who wasn't a publisher once said the mission of a modern newspaper is to comfort the afflicted and afflict the comfortable.

The people who bought Netscape Communications Corp.'s initial public offering last week at $28 must feel comfortable. A first-day profit of 108% does wonders for a nasty disposition.

As for the rest of us — especially suckers who bought Netscape shares at $75 — let this postmortem balm comfort our affliction of envy.

David J. Buerger

Netscape's amazing IPO proved again that the stock market is crazy. The start-up's first-day market capitalization topped $2 billion. Its first six months of revenue was just $17 million. Netscape even lacks a price-earnings ratio. A wizard with *The Wall Street Journal* noted that you can't derive P/E without E.

People made and lost fortunes during Netscape's IPO. But the real story is not Netscape per se. Yes, I agree — it's hard to sidestep that little detail of $2 billion in new wealth. If I was smarter, some of it would be mine. Then I'd be writing this from an exotic tropical island (if I wasn't busy sunning, snorkeling or sailing).

Netscape joins two other Internet-related companies that just went public: Spyglass, Inc. and UUNET Technologies, Inc. The latter two opened at $17 and $14, respectively; both are trading in the low 40s. Like Netscape, neither one has turned a profit.

So why are these stocks soaring when the fundamentals are askew?

The answer is easy — greed. The market is filled with investors who believe these companies can squeeze water from rocks. Profits are still years away, yet investors don't want to miss the next Microsoft, so they're placing their bets now.

The dramatic run-up of these companies' stocks mirrors the Convergence Mania that swept telecommunications and cable television stocks in late 1993.

Grandiose information superhighway plans were announced almost daily. Giant corporations rushed to marry new partners, while investors gobbled up their stocks. Prices shot up. Short honeymoons and divorces then soured expectations, and stock prices fell.

Fallout from Convergence Mania continues. Once-dramatic trials of video on demand were whittled into halfhearted, scaled-down tests. Some were canceled. Enthusiasm for convergence was dampened by its price tag and long, speculative payback.

And Internauts, you might recall, don't like to pay for anything. 'Net users who work for large institutions rarely pay a dime. Some hard-core independents, like me, do pay — often $100 or more a month. But most of that is work-related. Internet dabblers pay much less.

New lowball service fees announced by America Online, CompuServe, Microsoft and Prodigy, for instance, do not portend big profits unless zillions of new users enlist and use their offerings. And vicious competition will drive those fees lower each year.

CompuServe, for instance, just announced that it will cut out surcharges for E-mail that its users exchange with Internauts. The company learned it could not keep its customers in a cage, despite the penalty fees. The Internet's low-cost aura has commercial services scared to death.

Another threat to commercial services is the World-Wide Web. Experts predict that the Web will sport 11 million users by 1998. Commercial providers are rushing to link their customers to this free resource. Software to tap Web access, of course, is usually free.

Netscape earned Web dominance by giving away quality software. Profit potential? Someone show me where.

The masses targeted by these services are fickle. Turnover is high. That will change, but don't hold your breath.

This hysteria about the Internet is more than a sideshow for corporate network managers. Your major net equipment and software suppliers are also looking to the Internet in the hope of tapping into the next mass market. Or maybe they just want to look hip.

But what if your suppliers' fascination with the Internet distracts them from core businesses? What if regular product quality suffers or upgrades are delayed? Internet mania will hit you where it hurts.

Novell, Inc., for instance, is pushing its Pervasive Computing vision in a big way. It's goal last fall was to hook over one billion people to computer nets by the year 2000. That's now been scaled back to a billion consumer devices. Whatever.

Such lofty goals inspire the imagination. But most Novell users would settle for a decent Windows NT requestor.

The Internet probably will change the world. Some day. But comfortable investors should think hard about speculating in pioneers. Slow cash flow always precedes affliction.

Buerger is an Atlanta-based writer and industry consultant. He can be reached at dbuerger@pipeline.com.

CyberSpeak

Voices from the reader network

NEXT QUESTION

Windows 95 has arrived at last. Do you think it lives up to all the hype?

Responses due by 8 p.m. Thursday, Aug. 31. You'll get a T-shirt if we print your response. Please include your name, title, company and address.

What's your review of the new movie The Net?

■ "So how exactly does Sandra Bullock get that killer tan? Must be all that monitor radiation."
Robert Beverly, chief technical officer, G&R Data Group, Inc.

■ "This movie conveys Hollywood's and the media's ignorance of the Internet.

"We are bombarded with news concerning both the dark and evil side of cyberspace. The only thing that is real about *The Net* is Sandra Bullock's good looks. That's Hollywood for you!"
Tom Tracey, systems administrator, Geo-Spatial Solutions

■ "I went to see *The Net* prepared to scoff. Instead, I ended up drawn in by a fast-paced plot no less plausible than other science fiction movies. Sandra Bullock's character, a telecommuting software consultant, was done perfectly, from the all-night IRCing to the awkwardness dealing with people in the flesh.

"What struck me most, though, was that the technobabble in the movie was our technobabble. IP addresses and URLs flew across the screen with very few inconsistencies, allowing the viewer to preserve suspension of disbelief."
Ben Brumfield, consulting specialist, network management, Rice University

■ "*The Net* is one of the better Hollywood films about computer/information issues, not that Hollywood has produced gems in this genre.

"The film was a fun ride, keeping my attention. It had some of the best depictions of what Winn Schwartau called Class I information warfare in his book *Information Warfare.* But the film left unresolved the question, how do we live in this fast-moving information age? The film hints of more mischief, that the future is not necessarily safe."
J.D. Abolins, administrative analyst, New Jersey Department of Environmental Protection

"WHAT'S HOT TODAY CAN BE ANCIENT HISTORY TOMORROW. WE HAVE TO RESPOND INSTANTLY TO CUSTOMER DEMAND OR MISS THE OPPORTUNITY."

Mary Evans, Vice President, Store Operations,
Babbage's Software Stores, NeoStar Retail Group

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For the complete Babbage's story, call Btrieve Technologies, winner of the 1995 RealWare Award at DB/Expo.

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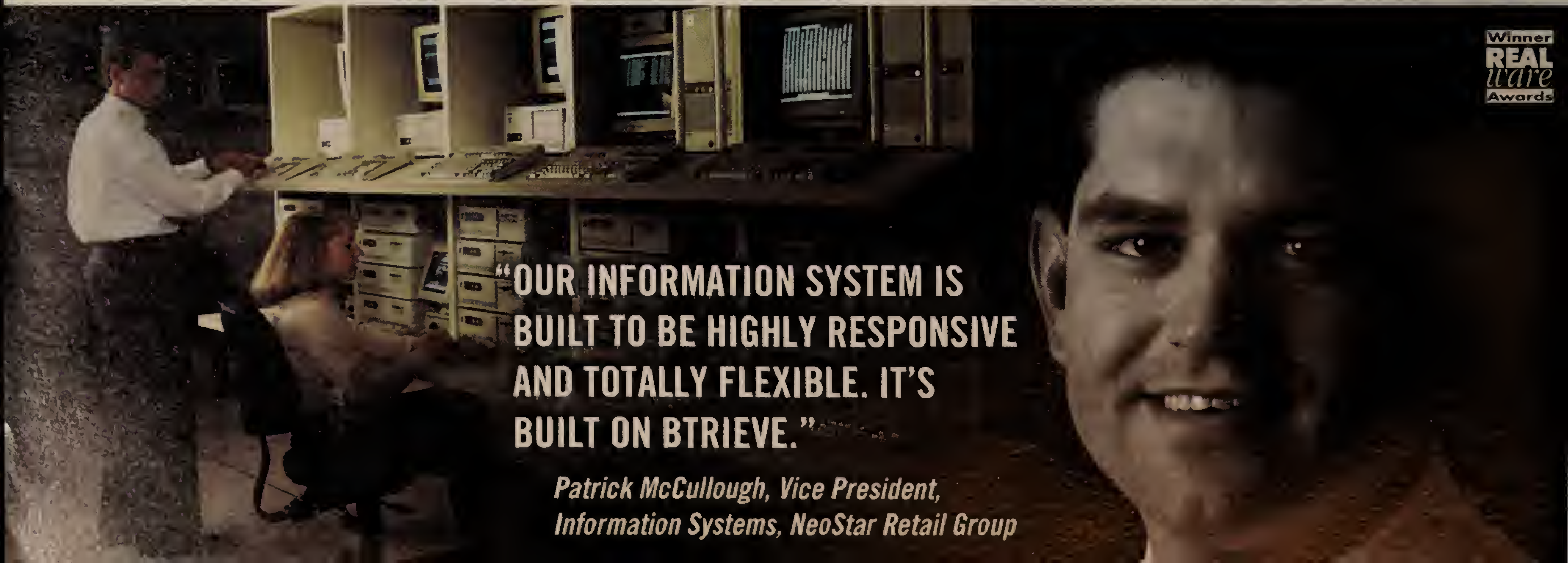

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